NOTICE

All drawings located at the end of the document.

Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

Area 2-Group 2a CLOSURE PROJECT (991 West Tunnel and Buildings 985, 996, 997, 999)

REVISION 0

August 21, 2003

CLASSIFICATION REVIEW NOT REQUIRED PER
EXEMPTION NUMBER CEX-005-02

1/66

PRE-DEMOLITION SURVEY REPORT (PDSR)

Area 2-Group 2a CLOSURE PROJECT
(991 West Tunnel and Buildings 985, 996, 997, 999)

REVISION 0

August 21, 2003

Reviewed by: _____ Date: _____
Don Risoli, Quality Assurance

Reviewed by: _____ Date: 8/25/03
D.P. Snyder, RISS ESH&Q Manager

Approved by: _____ Date: 8/29/03
Karen Wiemelt, K-H Project Manager

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ATTACHMENTS

ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_W$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U.S. Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
HEUN	Highly Enriched Uranyl Nitrate
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSA	Removable Surface Activity
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

EXECUTIVE SUMMARY

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of the Area 2–Group 2a facilities (i.e., Building 991 West Tunnel, 985, 996, 997 and 999). Because these Type 2 facilities will be decommissioned, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) to supplement the Reconnaissance Level Characterization of this Type 2 facility. Building surfaces characterized as part of this PDS included the floors, walls, ceilings, and roofs. Environmental media beneath and surrounding the facilities were not within the scope of this PDS and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

This PDS encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP). The characterization built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report and Reconnaissance Level Characterization Report.

Results indicate that no radiological or chemical contamination exists in excess of the PDSP unrestricted release limits. Any potentially PCB-containing fluorescent light ballast and hazardous waste items (e.g., mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury-containing gauges, circuit boards, leaded glass, and lead-acid batteries) were previously removed from the building and therefore, do not impact decontamination and decommissioning activities.

Based upon this PDSR, the Area 2-Group 2a facilities can be decommissioned and the waste managed as PCB Bulk Product or sanitary waste, and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete. If appropriate approvals are obtained, the 991 West Tunnel and Vaults 996, 997 and 999 are also acceptable from a PDS standpoint to remain in-place underground. To ensure that the facility remains free of contamination and that PDS data remain valid, Level 2 Isolation Controls have been established, and the area has been posted accordingly.

1 INTRODUCTION

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of the Area 2–Group 2a facilities (i.e., 991 West Tunnel, 985, 996, 997 and 999). Because these Type 2 facilities will be decommissioned, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) to supplement the Reconnaissance Level Characterization of these Type 2 facilities. Building surfaces characterized as a part of this PDS included floors, walls, ceilings and roofs. Environmental media beneath and surrounding the facilities were not within the scope of this PDS and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these are the Area 2-Group 2a facilities. The location of this facility is shown in Attachment A, Facility Location Map. These facilities no longer support the RFETS mission and will be decommissioned to reduce Site infrastructure, risks and/or operating costs.

Before these Type 2 facilities can be decommissioned, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for the Area 2-Group 2a facilities. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS is built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report and Reconnaissance Level Characterization Report.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Area 2 – Group 2a facilities PDS effort. A PDS is performed prior to building demolition to define the final radiological and chemical conditions of a facility. Final conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

1.2 Scope

This report presents the final radiological and chemical conditions of the Area 2-Group 2a facilities. Environmental media beneath and surrounding the facilities are not within the scope of this PDSR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs.

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2 HISTORICAL SITE ASSESSMENT

A Facility-specific Historical Site Assessment (HSA) and a Reconnaissance Level Characterization (RLC) was conducted to understand the facility history and related hazards. The HSA consisted of facility walkdowns, interviews, and document review, including review of the Historical Release Report, and were used to design the RLC. The Area 2-Group 2a facility RLC was performed in FY 2002 as part of Area 2-Group 2 RLCR (Refer to *Reconnaissance Level Characterization Report for Area 2-Group 2 Facilities*, January 14, 2003, Revision 1). Based on the RLC results, the Area 2–Group 2a facilities were classified as Type 2 facilities, and therefore, PDS characterization was required before decommissioning of the facilities. This report documents the results of that PDS. The HSA and RLC results were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. HSA and RLC documentation are located in the RISS Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

The Area 2-Group 2a facilities were characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to the RISS Characterization Project files for the Area 2-Group 2a Radiological Characterization Plan). Five radiological survey unit packages were developed for the Area 2–Group 2a facilities: WTUN-2-001 (991 West Tunnel), 996-2-002 (996 interior), 999-2-003 (B999 interior), 997-2-004 (B997 interior) and 985-2-005 (B985 interior). Building 985 exterior was surveyed per PDS requirements as part of the Area 2-Group 2 RLCR, dated January 14, 2003, and met all PDSP DLCG values. Individual radiological survey unit packages are maintained in the RISS Characterization Project files.

The Area 2-Group 2a survey unit packages were developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), and scan measurements were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control*. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachment B, Radiological Data Summary and Survey Maps.

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B991 West Tunnel Interior (Survey Unit WTUN-2-001)
Building 991 West Tunnel interior was classified as a MARSSIM Class 2 Survey Unit. A total of 70 TSA measurements (16 systematically grid, 20 biased, 30 equipment and 4 QC) and 66 RSA measurements (16 systematically grid, 20 biased and 30 equipment) were taken and scan surveys performed. Alpha scan surveys of 25% of interior floor (124 m^2 minimum) and 10% of the walls and ceiling surfaces (164 m^2 minimum) at biased locations were performed. None of the measurements or scans indicated elevated activity above applicable DCGL values. Radiological survey data, statistical analysis results, survey locations and radiological scan maps are presented in Attachment B, Radiological Data Summary and Survey Maps.

B996 Interior (Survey Unit 996-2-002)
Building 996 interior was classified as a MARSSIM Class 2 Survey Unit. A total of 43 TSA measurements (19 systematically grid, 11 biased, 10 equipment and 3 QC) and 40 RSA measurements (19 systematically grid, 11 biased and 10 equipment) were taken and scan surveys performed. Alpha scan surveys of 25% of interior floor (37 m^2 minimum) and 10% of the walls and ceiling surfaces (50 m^2 minimum) at biased locations were performed. None of the measurements or scans indicated elevated activity above applicable DCGL values. Refer to Attachment B, Radiological Data Summary and Survey Maps for survey data, statistical analysis results, survey locations and radiological scan maps.

B999 Interior (Survey Unit 999-2-003)
Building 999 interior was classified as a MARSSIM Class 2 Survey Unit. A total of 46 TSA measurements (23 systematically grid, 10 biased, 10 equipment and 3 QC) and 43 RSA measurements (23 systematically grid, 10 biased and 10 equipment) were taken and scan surveys performed. Alpha scan surveys of 25% of interior floor (33 m^2 minimum) and 10% of the walls and ceiling surfaces (39 m^2 minimum) at biased locations were performed. None of the measurements or scans indicated elevated activity above applicable DCGL values. Refer to Attachment B, Radiological Data Summary and Survey Maps for survey data, statistical analysis results, survey locations and radiological scan maps.

B997 Interior (Survey Unit 997-2-004)
Building 997 interior was classified as a MARSSIM Class 2 Survey Unit. A total of 44 TSA measurements (21 systematically grid, 10 biased, 10 equipment and 3 QC) and 41 RSA measurements (21 systematically grid, 10 biased and 10 equipment) were taken and scan surveys performed. Alpha scan surveys of 25% of interior floor (33 m^2 minimum) and 10% of the walls and ceiling surfaces (47 m^2 minimum) at biased locations were performed. None of the measurements or scans indicated elevated activity above applicable DCGL values. Refer to Attachment B, Radiological Data Summary and Survey Maps for survey data, statistical analysis results, survey locations and radiological scan maps.

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B985 Interior (Survey Unit 985-2-005)
Building 985 interior was classified as a MARSSIM Class 2 Survey Unit. A total of 82 TSA measurements (37 systematically grid, 10 biased, 30 equipment and 5 QC) and 77 RSA measurements (37 systematically grid, 10 biased and 30 equipment) were taken and scan surveys performed. Alpha scan surveys of 25% of interior floor (53 m^2 minimum) and 10% of the walls and ceiling surfaces (54 m^2 minimum) at biased locations were performed. None of the measurements or scans indicated elevated activity above applicable DCGL values. Refer to Attachment B, Radiological Data Summary and Survey Maps for survey data, statistical analysis results, survey locations and radiological scan maps.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

The Area 2-Group 2a facilities were characterized for chemical hazards per the PDSP. Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on, or in the facility. Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined. A Chemical Characterization Plan was developed during the planning phase that describes sampling requirements and the justification for the sample locations and estimated sample numbers. The contaminants of concern were asbestos and beryllium. Refer to Attachment C, Chemical Summary Data and Sample Maps, for details on sample results and sample locations. Isolation control postings are displayed on affected structures to ensure no hazardous materials are introduced.

4.1 Asbestos

A survey of building materials suspected of containing asbestos was conducted during the RLC for the Area 2–Group 2, dated January 14, 2003. A CDPHE-certified asbestos inspector conducted the inspections and sampling in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 1.* Building materials suspected of containing asbestos were identified for sampling at the discretion of the inspector. Prior to decommissioning, asbestos abatement will be conducted per CDPHE, Regulation No. 8, Part B, *Emission Standards for Asbestos*. On this basis, no additional Asbestos sampling was performed as part of this PDS.

4.2 Beryllium (Be)

Eighty-eight (88) random and biased beryllium samples were collected during the RLC of the Area 2-Group 2 Facilities and all results were less than the investigative limit of 0.1 $\mu g/100cm^2$. Refer to the Area 2-Group 2 RLCR, dated January 14, 2003, Revision 1, for RLC beryllium laboratory sample data and location maps. RLC smear samples were collected on facility surfaces, including on the inside and outside systems and equipment, in accordance with the RLCP and the *Beryllium Characterization Procedure,* PRO-536-BCPR, Revision 0, September 9, 1999.

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Seventy-six (76) additional biased beryllium samples were collected in the Area 2-Group 2a facilities as part of the Area 2-Group 2a PDSR in order to supplement the RLCR data. Biased sampling was performed and all PDS beryllium smear results were less than the investigative limit of 0.1 $\mu g/100cm^2$. Smear samples were collected on all facility surfaces, including on the inside and outside systems and equipment, in accordance with the PDSP and the *Beryllium Characterization Procedure,* PRO-536-BCPR, Revision 0, September 9, 1999. PDS supplementary beryllium laboratory sample data and location maps are contained in Attachment C, "Chemical Data Summaries and Sample Maps."

4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]

Based on a review of the HSAR, RLCR, interviews, and facility walkdowns, there is no indication that the Area 2-Group 2a facilities have been contaminated by RCRA/CERLCA constituents. Chemicals have been used within most of the facilities, and non-RCRA/CERCLA wastes have been stored or moved throughout, but there are no records or visible signs of chemical releases. Therefore, sampling and analysis for RCRA/CERCLA constituents was not conducted as part of this PDS.

Sampling for lead in paint in the Area 2 - Group 2a facilities was not performed. Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas shall be managed as non-hazardous (solid) wastes, and additional analysis for characteristics of hazardous waste derived from LBP is not a requirement for disposal.

The facilities may have contained some RCRA regulated items, such as mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury containing gauges, circuit boards, and lead-acid batteries. However, these items have been removed and managed in accordance with the Colorado Hazardous Waste Act.

4.4 Polychlorinated Biphenyls (PCBs)

Based on the HSAR, RLCR, interviews, and facility walkdowns of the Area 2 - Group 2a facilities, no PCB-containing equipment were ever used or stored in the buildings, making the potential for PCB contamination resulting from spills highly unlikely. Therefore, PCB sampling was not performed as part of the PDS.

Based on the age of the facilities (constructed prior to 1980), paints used may contain PCBs, and painted surfaces will need to be disposed of as PCB Bulk Product Waste. Painted concrete surfaces can be used as backfill on site in accordance with approval received from EPA in November 2001 (letter from K. Clough, US EPA Region 8, to J. Legare, DOE RFFO, 8EPR-F, Approval of the Risk-Based Approach for Polychlorinated Biphenyls (PCB)-Based Painted Concrete), provided the concrete meets the unrestricted-release criteria outlined in the Concrete Recycling RSOP.

The facilities may have contained PCB fluorescent light ballast, however, all ballasts have been checked and leaking PCB ballasts have been removed from the facility and managed in accordance with the Colorado Hazardous Waste Act.

5 PHYSICAL HAZARDS

Physical hazards associated with the Area 2 - Group 2a facilities consist of those common to standard industrial environments, and include hazards associated with energized systems, utilities, and trips and falls. The 991 West Tunnel and the storage vault buildings 996, 997 and 999 are underground. Building 985 has a pit approximately 16 by 16 feet wide and 12.5 feet deep that housed the plenum deluge tank. Building 985 also sits on a hillside just uphill from 991 building. There are no other unique hazards associated with the facilities. The facilities have been relatively well maintained and are in good physical condition, and therefore, do not present hazards associated with building deterioration. Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Area 2 - Group 2a facilities, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments B and C) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original project DQOs.

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate:

- the *number* of samples and surveys;
- the *types* of samples and surveys;
- the sampling/survey process as implemented "in the field"; and
- the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are provided in Attachment D.

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The decommissioning of Area 2 - Group 2a facilities will generate a variety of wastes. Estimated waste types and waste volumes are presented below. All wastes can be disposed of as sanitary waste, except PCB Bulk Product Waste. PCB ballast and hazardous waste items have been removed and managed pursuant to Site PCB and waste management procedures. All concrete surfaces can be used as backfill onsite in accordance with the RFCA RSOP for Recycling Concrete.

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WASTE TYPES AND VOLUME ESTIMATES							
Facility	**Concrete (cu ft)**	**Wood (cu ft)**	**Metal (cu ft)**	**Corrugated Sheet Metal (cu ft)**	**Wall Board (cu ft)**	**ACM (cu ft)**	**Other Waste (cu ft)**
985	18,000	None	980	None	None	None	900 – pipe insulation 400 – fiberglass insulation 600 – roofing material
991 West Tunnel	0[A]	0[A]	0[A]	None	None	None	None
996	0[A]	0[A]	None	None	None	None	None
997	0[A]	0[A]	None	None	None	None	None
999	0[A]	0[A]	None	None	None	None	None

[A]These buildings will be decommissioned in-place, therefore, disposal waste volumes are zero (0).

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, the Area 2 - Group 2a facilities are classified as RFCA Type 2 facility pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999) and are ready for demolition/decommissioning. If appropriate approvals are obtained, the 991 West Tunnel and Vaults 996, 997 and 999 are also acceptable from a PDS standpoint to remain in-place underground. The Area 2 -Group 2a facilities possess no radiological or chemical contamination in excess of the PDSP unrestricted release limits. PCB ballast and hazardous waste items have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations.

The PDS for the Area 2 - Group 2a facilities was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. Environmental media beneath and surrounding the facilities will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA. To ensure that the Area 2 - Group 2a facilities remain free of contamination and that PDS data remain valid, Level 2 Isolation Controls have been established, and the facilities are posted accordingly.

9 REFERENCES

DOE/RFFO, CDPHE, EPA, 1996. *Rocky Flats Cleanup Agreement (RFCA),* July 19, 1996.

DOE Order 5400.5, *"Radiation Protection of the Public and the Environment."*

DOE Order 414.1A, *"Quality Assurance."*

EPA, 1994. *"The Data Quality Objective Process,"* EPA QA/G-4.

K-H, 1999. *Decommissioning Program Plan*, June 21, 1999.

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 1, November 1, 2001.

MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 3, January 1, 2002.

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 4, July 15, 2002.

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.

MARSSIM - *Multi-Agency Radiation Survey and Site Investigation Manual* (NUREG-1575, EPA 402-R-97-016).

PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure,* Rev. 1, May 22, 2001.

PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 1, May 22, 2001.

PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.

PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-563-ACPR, *Asbestos Characterization Procedure,* Revision 0, August 24, 1999.

PRO-536-BCPR, *Beryllium Characterization Procedure*, Revision 0, August 24, 1999.

RFETS, *Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition.*

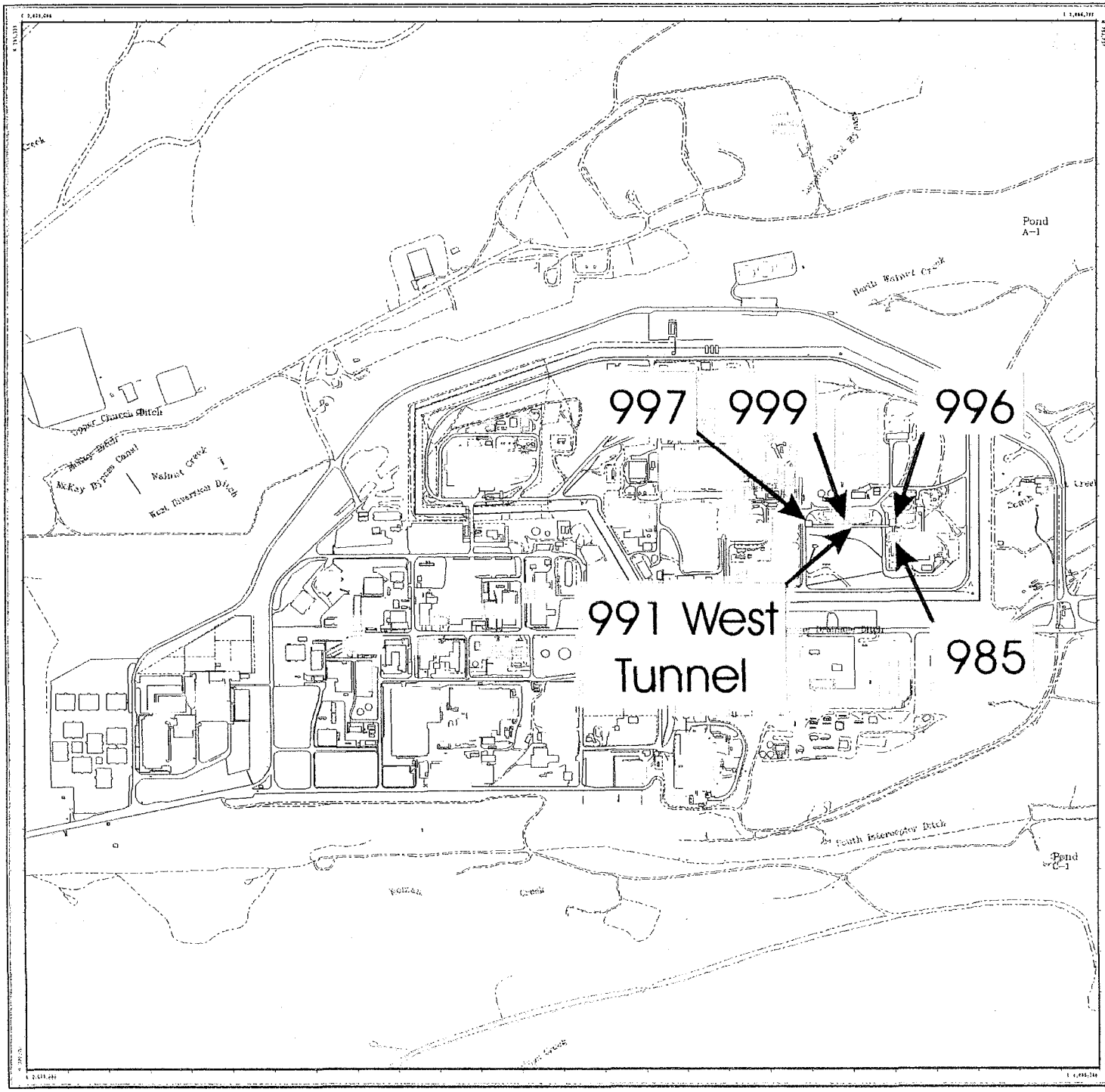
RFETS, *Environmental Waste Compliance* Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.

RFETS, *RFCA RSOP for Recycling Concrete*, September 28, 1999

Reconnaissance Level Characterization Report for the Area 2-Group 2 Facilities, January 14, 2003, Revision 1

ATTACHMENT A

Facility Location Map



Area 2
Group 2 991West Tunnel, 996, 997, 999 & 985

Standard Map Features

- Buildings and other structures
- Demolished buildings and other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads

DATA SOURCE BASE FEATURES:
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by EG&G RSL, Las Vegas.
Digitized from the orthophotographs. 1/95

N

Scale = 1 : 12450
1 Inch represents approximately 1038 feet

250 0 500 1000 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

GIS Dept. 303-966-7707

Prepared by:

Prepared for:

KAISER-HILL COMPANY

MAP ID: FY2002

Aug. 5, 2003

NT Svr wr/projects/02-0355/991-Wfun-over.cdr

ATTACHMENT B

Radiological Data Summaries and Survey Maps

SURVEY UNIT WTUN-2-001
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B991 West Tunnel Interior

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Total Surface Activity Measurements

	65 Number Required	66 Number Obtained	
MIN	-9.4		dpm/100 cm^2
MAX	73.9		dpm/100 cm^2
MEAN	24.6		dpm/100 cm^2
STD DEV	23.5		dpm/100 cm^2
TRANSURANIC $DCGL_W$	100		dpm/100 cm^2

Removable Activity Measurements

	65 Number Required	66 Number Obtained	
MIN	-1.5		dpm/100 cm^2
MAX	7.9		dpm/100 cm^2
MEAN	0.8		dpm/100 cm^2
STD DEV	1.8		dpm/100 cm^2
TRANSURANIC $DCGL_W$	20		dpm/100 cm^2

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SURVEY UNIT WTUN-2-001
TSA - DATA SUMMARY

Manufacturer:	NE Tech	NE Tech	NE Tech	NE Tech
Model:	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	1	2	3	4
Serial #:	2404	1366	1681	1260
Cal Due Date:	10/9/03	11/27/03	10/18/03	7/10/03
Analysis Date:	6/23/03	6/23/03	6/23/03	6/23/03
Alpha Eff. (c/d):	0.222	0.210	0.218	0.223
Alpha Bkgd (cpm)	0.7	2.7	2.7	0.7
Sample Time (min)	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0

Manufacturer:	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech
Model:	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	13	14	15	20	21
Serial #:	1256	1589	1379	1379	3105
Cal Due Date:	12/18/03	12/30/03	12/25/03	12/25/03	1/15/04
Analysis Date:	7/8/03	7/8/03	7/8/03	7/23/03	7/23/03
Alpha Eff. (c/d):	0.230	0.220	0.216	0.216	0.201
Alpha Bkgd (cpm)	1.3	1.3	0.0	1.3	4.7
Sample Time (min)	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	3	7.3	33.5	0.7	3.2	12.4
2	13	11.3	49.1	6.7	29.1	28.0
3	13	9.3	40.4	1.3	5.7	19.3
4	13	4.0	17.4	2.7	11.7	-3.7
5	13	10.7	46.5	4.0	17.4	25.4
6	13	8.0	34.8	5.3	23.0	13.7
7	13	12.7	55.2	4.0	17.4	34.1
8	14	8.7	39.5	4.0	18.2	18.5
9	1	8.0	36.0	8.0	36.0	14.9
10	1	6.0	27.0	3.3	14.9	5.9
11	3	20.7	95.0	4.7	21.6	73.9
12	3	10.0	45.9	5.3	24.3	24.8
13	1	20.7	93.2	8.0	36.0	72.2
14	3	6.0	27.5	3.3	15.1	6.4
15	3	7.3	33.5	3.3	15.1	12.4
16	3	8.7	39.9	0.7	3.2	18.8
17	4	10.7	48.0	6.7	30.0	26.9
18	1	7.3	32.9	4.0	18.0	11.8
19	1	6.7	30.2	6.0	27.0	9.1
20	2	17.3	82.4	8.0	38.1	61.3
21	2	19.3	91.9	6.0	28.6	70.8
22	1	7.3	32.9	4.7	21.2	11.8
23	1	8.0	36.0	5.3	23.9	14.9
24	3	11.3	51.8	4.7	21.6	30.7
25	3	2.7	12.4	3.3	15.1	-8.7
26	3	8.7	39.9	2.0	9.2	18.8
27	4	6.0	26.9	4.0	17.9	5.8
28	20	16.0	74.1	4.7	21.8	53.0
29	13	2.7	11.7	6.0	26.1	-9.4
30	13	5.3	23.0	2.7	11.7	2.0
31	13	5.3	23.0	2.7	11.7	2.0

19

SURVEY UNIT WTUN-2-001
TSA - DATA SUMMARY

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
32	20	18.3	84.7	6.7	31.0	63.6
33	13	6.7	29.1	6.0	26.1	8.0
34	20	12.6	58.3	4.0	18.5	37.2
35	14	7.3	33.2	6.7	30.5	12.1
36	15	4.0	18.5	8.0	37.0	-2.6
37	1	12.7	57.2	4.0	18.0	36.1
38	15	6.7	31.0	2.7	12.5	9.9
39	14	7.3	33.2	3.3	15.0	12.1
40	14	13.3	60.5	6.0	27.3	39.4
41	15	5.3	24.5	2.7	12.5	3.4
42	15	4.0	18.5	2.0	9.3	-2.6
43	15	8.0	37.0	8.0	37.0	15.9
44	15	6.0	27.8	4.0	18.5	6.7
45	20	12.7	58.8	6.0	27.8	37.7
46	20	8.0	37.0	8.0	37.0	15.9
47	13	4.0	17.4	1.3	5.7	-3.7
48	20	11.3	52.3	6.0	27.8	31.2
49	20	18.0	83.3	4.7	21.8	62.2
50	20	10.0	46.3	6.3	29.2	25.2
51	20	20.0	92.6	4.0	18.5	71.5
52	20	18.7	86.6	6.0	27.8	65.5
53	13	3.3	14.3	6.7	29.1	-6.7
54	20	20.0	92.6	8.0	37.0	71.5
55	13	6.0	26.1	6.7	29.1	5.0
56	4	9.3	41.7	0.0	0.0	20.6
57	4	7.3	32.7	3.7	16.6	11.6
58	4	5.4	24.2	4.0	17.9	3.1
59	3	9.3	42.7	4.0	18.3	21.6
60	4	8.0	35.9	0.7	3.1	14.8
61	1	7.3	32.9	6.0	27.0	11.8
62	4	20.7	92.8	8.0	35.9	71.7
63	3	10.7	49.1	6.0	27.5	28.0
64	1	18.7	84.2	2.0	9.0	63.1
65	1	14.0	63.1	5.3	23.9	42.0
66	1	14.0	63.1	3.3	14.9	42.0

1 - Average LAB used to subtract from Gross Sample Activity

21.1	Sample LAB Average
MIN	-9.4
MAX	73.9
MEAN	24.6
SD	23.5
Transuranic $DCGL_W$	**100**

QC Measurements

37 QC	21	6.0	29.9	4.7	23.4	9.3
39 QC	21	6.7	33.3	4.0	19.9	12.8
56 QC	20	7.3	33.8	2.7	12.5	13.3
47 QC	21	9.4	46.8	5.3	26.4	26.2

1 - Average QC LAB used to subtract from Gross Sample Activity

20.5	QC LAB Average
MIN	9.3
MAX	26.2
MEAN	15.4
Transuranic $DCGL_W$	**100**

20

SURVEY UNIT WTUN-2-001
RSC - DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	5	6	7	8
Serial #:	959	952	971	924
Cal Due Date:	7/9/03	7/9/03	8/6/03	10/23/03
Analysis Date:	6/24/03	6/24/03	6/24/03	6/24/03
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.0	0.4	0.1	0.5
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	9.0	9.0	9.0	9.0

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	16	17	18	19
Serial #:	770	830	971	924
Cal Due Date:	10/17/03	10/22/03	8/6/03	10/23/03
Analysis Date:	7/9/03	7/9/03	7/9/03	7/9/03
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.4	0.2	0.2
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	9.0	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	5	0	0.0
2	16	1	0.9
3	17	0	-1.2
4	18	2	2.4
5	19	0	-0.6
6	16	0	-0.6
7	17	1	0.3
8	18	1	0.9
9	6	1	0.3
10	7	0	-0.3
11	8	0	-1.5
12	5	0	0.0
13	6	1	0.3
14	7	1	1.2
15	8	0	-1.5
16	5	0	0.0
17	6	1	0.3
18	7	1	1.2
19	8	0	-1.5
20	5	0	0.0
21	6	1	0.3
22	7	0	-0.3
23	8	0	-1.5
24	5	0	0.0
25	6	0	-1.2
26	7	2	2.7
27	8	1	0.0
28	16	1	0.9
29	18	0	-0.6
30	19	0	-0.6
31	16	1	0.9

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SURVEY UNIT WTUN-2-001
RSC - DATA SUMMARY

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
32	17	1	0.3
33	17	2	1.8
34	18	4	5.5
35	19	0	-0.6
36	16	0	-0.6
37	17	2	1.8
38	18	2	2.4
39	19	0	-0.6
40	17	2	1.8
41	16	2	2.4
42	18	2	2.4
43	19	3	3.9
44	16	0	-0.6
45	17	1	0.3
46	18	2	2.4
47	18	0	-0.6
48	19	1	0.9
49	16	2	2.4
50	17	2	1.8
51	18	2	2.4
52	19	2	2.4
53	19	1	0.9
54	16	2	2.4
55	16	0	-0.6
56	5	0	0.0
57	6	6	7.9
58	7	1	1.2
59	8	0	-1.5
60	5	1	1.5
61	6	1	0.3
62	7	0	-0.3
63	8	1	0.0
64	5	1	1.5
65	6	4	4.8
66	7	3	4.2
		MIN	-1.5
		MAX	7.9
		MEAN	0.8
		SD	1.8
		Transuranic $DCGL_W$	**20**

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SURVEY UNIT 996-2-002
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B996 (Interior)

Total Surface Activity Measurements

	39 Number Required	40 Number Obtained	
MIN	-11.7		dpm/100 cm^2
MAX	70.9		dpm/100 cm^2
MEAN	13.6		dpm/100 cm^2
STD DEV	18.7		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	39 Number Required	40 Number Obtained	
MIN	-1.2		dpm/100 cm^2
MAX	2.4		dpm/100 cm^2
MEAN	0.1		dpm/100 cm^2
STD DEV	1.0		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

25

SURVEY UNIT 996-2-002
TSA - DATA SUMMARY

Manufacturer:	NE Tech	NE Tech	NE Tech	NE Tech
Model:	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	1	2	7	8
Serial #:	2391	3115	1681	1402
Cal Due Date:	7/10/03	9/24/03	10/18/03	9/12/03
Analysis Date:	4/29/03	4/29/03	6/30/03	6/30/03
Alpha Eff. (c/d):	0.220	0.218	0.218	0.216
Alpha Bkgd (cpm)	2.7	2.0	4.0	2.3
Sample Time (min)	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	2	7.3	33.5	4.7	21.6	18.6
2	1	5.3	24.1	4.0	18.2	9.2
3	1	2.0	9.1	2.0	9.1	-5.8
4	2	2.0	9.2	1.3	6.0	-5.7
5	2	4.0	18.3	0.7	3.2	3.5
6	1	4.7	21.4	4.7	21.4	6.5
7	2	12.7	58.3	1.3	6.0	43.4
8	2	4.0	18.3	4.0	18.3	3.5
9	1	2.3	10.5	3.3	15.0	-4.4
10	2	2.7	12.4	6.7	30.7	-2.5
11	2	7.3	33.5	3.3	15.1	18.6
12	1	6.0	27.3	2.0	9.1	12.4
13	2	3.3	15.1	5.3	24.3	0.3
14	2	8.7	39.9	0.7	3.2	25.1
15	2	9.3	42.7	5.3	24.3	27.8
16	8	6.0	27.8	4.7	21.8	12.9
17	2	7.3	33.5	1.3	6.0	18.6
18	2	6.7	30.7	4.0	18.3	15.9
19	1	1.4	6.4	5.3	24.1	-8.5
20	2	15.3	70.2	4.7	21.6	55.3
21	1	4.7	21.4	2.0	9.1	6.5
22	1	0.7	3.2	2.7	12.3	-11.7
23	1	6.0	27.3	2.0	9.1	12.4
24	1	10.0	45.5	2.7	12.3	30.6
25	1	14.7	66.8	3.3	15.0	52.0
26	1	4.0	18.2	2.0	9.1	3.3
27	2	7.3	33.5	1.3	6.0	18.6
28	2	18.7	85.8	5.3	24.3	70.9
29	1	4.7	21.4	4.0	18.2	6.5
30	2	6.7	30.7	3.3	15.1	15.9
31	1	3.3	15.0	2.0	9.1	0.1
32	1	3.3	15.0	4.0	18.2	0.1
33	1	6.0	27.3	2.0	9.1	12.4
34	1	6.7	30.5	0.7	3.2	15.6
35	2	7.3	33.5	3.3	15.1	18.6
36	2	0.7	3.2	2.7	12.4	-11.6

ZK

SURVEY UNIT 996-2-002
TSA - DATA SUMMARY

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
37	1	5.3	24.1	6.7	30.5	9.2
38	2	3.3	15.1	2.7	12.4	0.3
39	1	4.0	18.2	2.0	9.1	3.3
40	7	13.3	61.0	6.0	27.5	46.2

1 - Average LAB used to subtract from Gross Sample Activity

14.9	Sample LAB Average
MIN	-11.7
MAX	70.9
MEAN	13.6
SD	18.7
Transuranic $DCGL_W$	**100**

QC Measurements

7 QC	1	11.3	51.4	1.3	5.9	38.3
20 QC	1	14.0	63.6	3.3	15.0	50.6
28 QC	1	12.7	57.7	4.0	18.2	44.7

1 - Average QC LAB used to subtract from Gross Sample Activity

13.0	QC LAB Average
MIN	38.3
MAX	50.6
MEAN	44.5
Transuranic $DCGL_W$	**100**

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SURVEY UNIT 996-2-002
RSC - DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	3	4	5	6	9
Serial #:	1164	952	971	924	959
Cal Due Date:	6/17/03	7/9/03	8/6/03	10/23/03	7/9/03
Analysis Date:	5/1/03	5/1/03	5/1/03	5/1/03	6/30/03
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.4	0.2	0.0	0.2
Sample Time (min)	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10
MDC (dpm/100cm^2)	9.0	9.0	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	3	1	0.9
2	4	1	0.3
3	5	0	-0.6
4	6	1	1.5
5	3	1	0.9
6	4	1	0.3
7	5	0	-0.6
8	6	1	1.5
9	3	0	-0.6
10	4	1	0.3
11	5	0	-0.6
12	6	0	0.0
13	3	0	-0.6
14	4	0	-1.2
15	5	0	-0.6
16	9	1	0.9
17	3	0	-0.6
18	4	0	-1.2
19	5	0	-0.6
20	6	0	0.0
21	3	2	2.4
22	4	1	0.3
23	5	1	0.9
24	6	0	0.0
25	3	0	-0.6
26	4	0	-1.2
27	5	1	0.9
28	6	0	0.0
29	3	0	-0.6
30	4	1	0.3
31	5	2	2.4
32	6	0	0.0
33	3	1	0.9
34	4	0	-1.2
35	5	0	-0.6
36	6	0	0.0
37	3	0	-0.6
38	4	0	-1.2
39	5	2	2.4
40	9	0	-0.6
		MIN	-1.2
		MAX	2.4
		MEAN	0.1
		SD	1.0
		Transuranic DCGL$_W$	**20**

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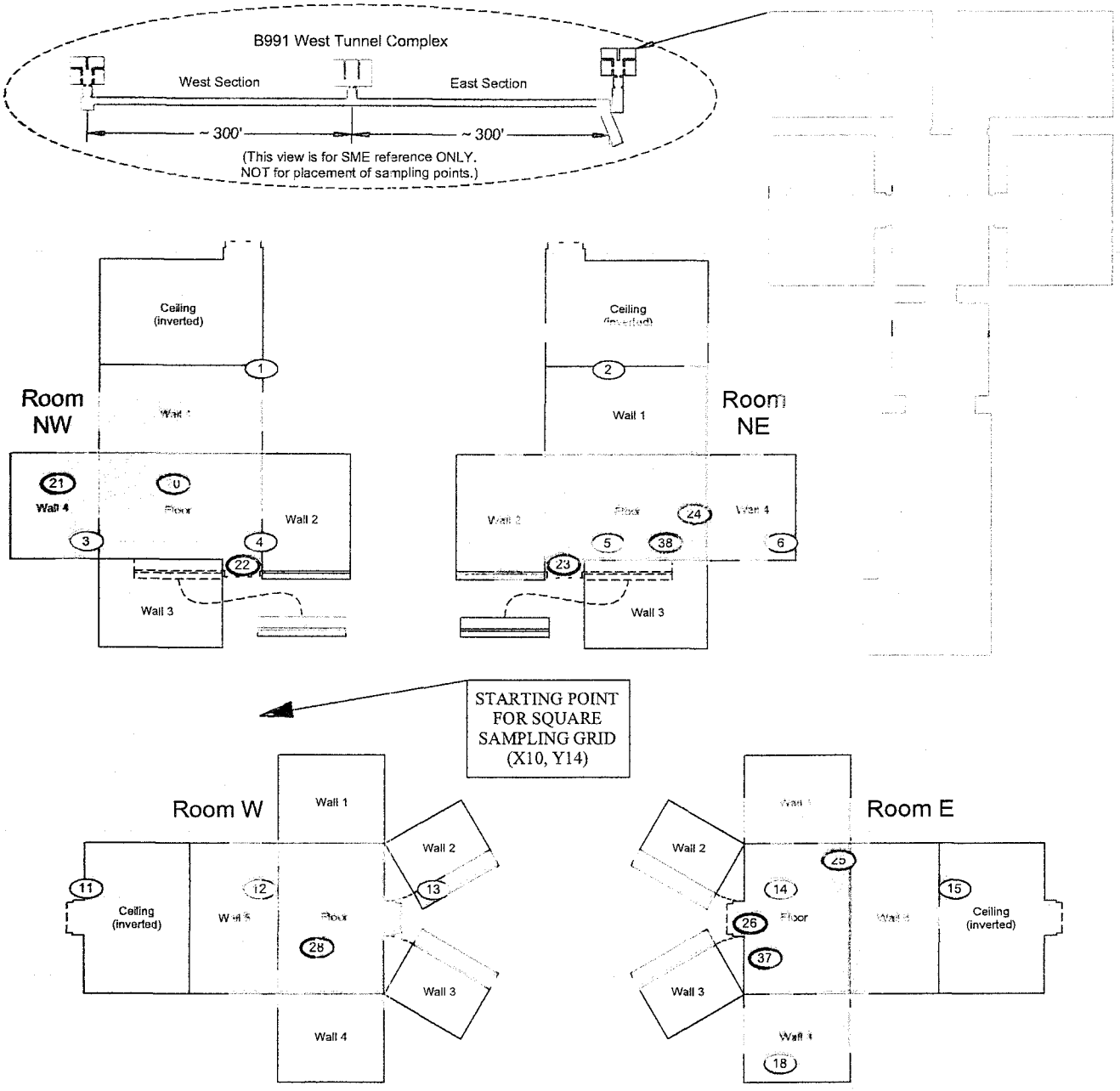
PRE-DEMOLITION SURVEY FOR AREA 2, GROUP 2A

Survey Area: 2 **Survey Unit: 996-2-002** **Classification: 2**
Building: 996
Survey Unit Description: Vault #996 (East end of the West 991 Tunnel) Interior
Total Area: 646 sq. m. **Floor Area: 147 sq. m.** **Wall Area: 353 sq. m.**
Grid Spacing for Survey Points: 6m X 6m

B996 (Vault #996), West 991 Tunnel
(This view is for SME reference ONLY.
NOT for placement of sampling points.)



Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25
0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
1, 2, 7 & 8

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 *Prepared for:*

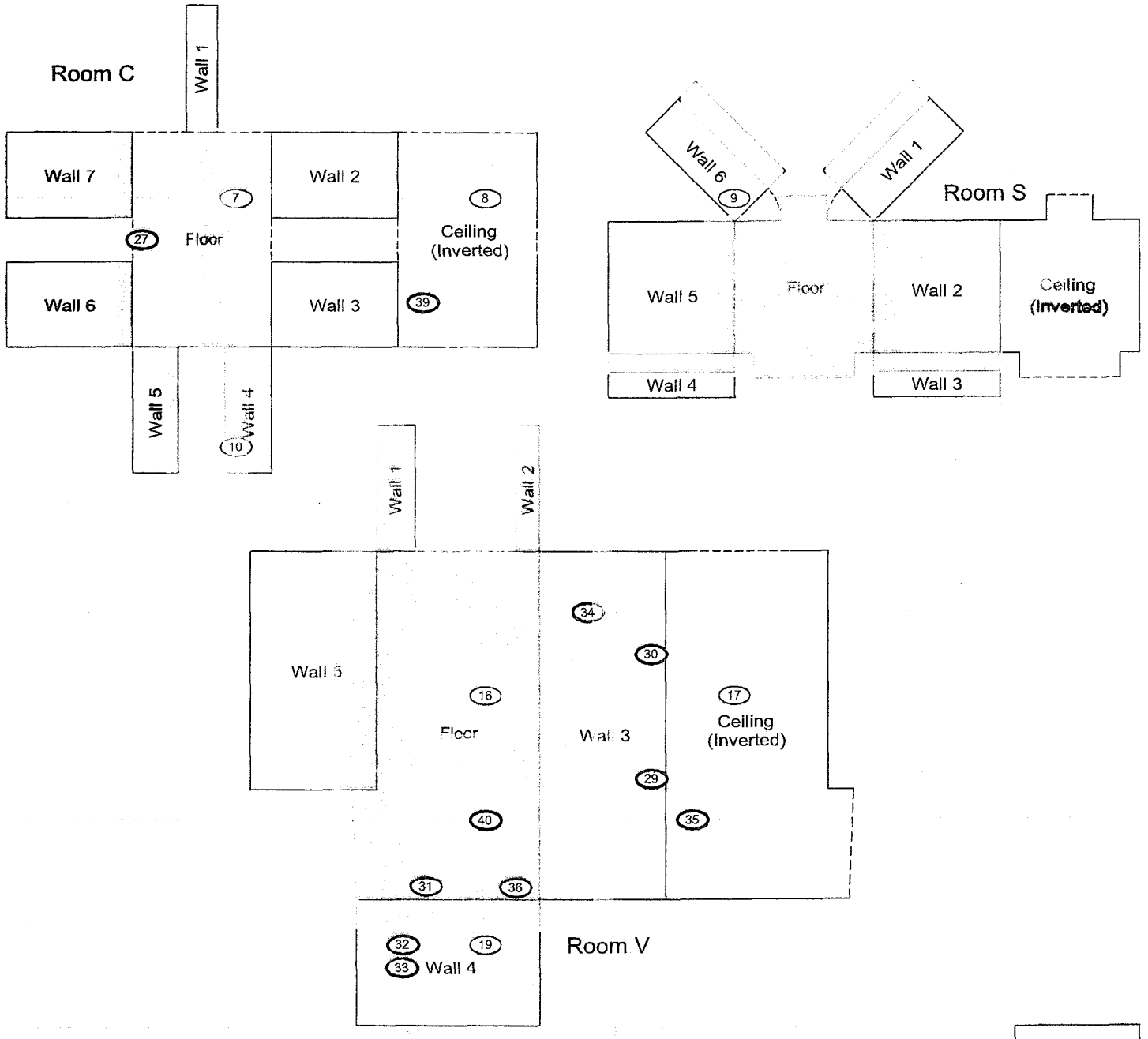
CH2MHILL Communications Group

KAISER HILL

MAP ID: 02-0335/B996 PG1-SC July 8, 2003

PRE-DEMOLITION SURVEY FOR AREA 2, GROUP 2A

Survey Area:2 **Survey Unit: 996-2-002** **Classification: 2**
Building: 996
Survey Unit Description: Vault #996 (East end of the West 991 Tunnel) Interior
Total Area: 646 sq. m. **Floor Area: 147 sq. m.** **Wall Area: 353 sq. m.**
Grid Spacing for Survey Points: 6m X 6m



Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15
0 METERS 5

1 inch = 12 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
1, 2, 7 & 8

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:

CH2MHILL Communications Group

KAISER-HILL

MAP ID: 02-0355/B996 PG2-SC July 9, 2003

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SURVEY UNIT 997-2-004
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B997 (Interior)

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Total Surface Activity Measurements

	41 Number Required	41 Number Obtained	
MIN	0.0		dpm/100 cm^2
MAX	85.3		dpm/100 cm^2
MEAN	26.1		dpm/100 cm^2
STD DEV	18.6		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	41 Number Required	41 Number Obtained	
MIN	-1.2		dpm/100 cm^2
MAX	4.8		dpm/100 cm^2
MEAN	0.5		dpm/100 cm^2
STD DEV	1.3		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

32

SURVEY UNIT 997-2-004
TSA - DATA SUMMARY

Manufacturer:	NE Tech	NE Tech	NE Tech	NE Tech
Model:	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	1	2	3	8
Serial #:	1417	1366	3115	1417
Cal Due Date:	7/28/03	6/26/03	9/24/03	7/28/03
Analysis Date:	4/30/03	4/30/03	4/30/03	6/18/03
Alpha Eff. (c/d):	0.218	0.209	0.218	0.218
Alpha Bkgd (cpm)	2.7	6.0	1.3	0.7
Sample Time (min)	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	2	10.7	51.2	7.3	34.9	29.6
2	2	9.3	44.5	7.3	34.9	22.9
3	3	7.3	33.5	7.3	33.5	11.9
4	1	8.0	36.7	2.7	12.4	15.1
5	1	16.0	73.4	3.3	15.1	51.8
6	2	13.3	63.6	6.7	32.1	42.0
7	1	11.3	51.8	2.0	9.2	30.2
8	1	7.3	33.5	4.0	18.3	11.9
9	2	14.0	67.0	8.0	38.3	45.4
10	1	8.0	36.7	6.0	27.5	15.1
11	1	15.3	70.2	3.3	15.1	48.6
12	1	8.7	39.9	4.0	18.3	18.3
13	3	5.3	24.3	2.7	12.4	2.7
14	3	16.0	73.4	7.3	33.5	51.8
15	2	4.7	22.5	3.3	15.8	0.9
16	3	14.0	64.2	6.0	27.5	42.6
17	1	5.3	24.3	4.0	18.3	2.7
18	3	6.0	27.5	3.3	15.1	5.9
19	2	6.7	32.1	6.7	32.1	10.5
20	3	9.3	42.7	4.7	21.6	21.1
21	3	10.0	45.9	5.3	24.3	24.3
22	3	12.0	55.0	4.7	21.6	33.4
23	1	12.0	55.0	4.0	18.3	33.4
24	1	16.0	73.4	3.3	15.1	51.8
25	3	11.3	51.8	4.0	18.3	30.2
26	3	10.0	45.9	4.7	21.6	24.3
27	3	7.3	33.5	2.7	12.4	11.9
28	1	4.7	21.6	6.0	27.5	0.0
29	1	10.0	45.9	6.0	27.5	24.3
30	3	8.7	39.9	4.7	21.6	18.3
31	3	9.3	42.7	3.3	15.1	21.1
32	3	5.3	24.3	5.3	24.3	2.7
33	3	16.0	73.4	6.7	30.7	51.8
34	1	12.0	55.0	2.0	9.2	33.4
35	1	14.7	67.4	6.0	27.5	45.8
36	2	6.0	28.7	3.3	15.8	7.1

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SURVEY UNIT 997-2-004
TSA - DATA SUMMARY

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
37	3	23.3	106.9	2.7	12.4	85.3
38	1	10.0	45.9	2.0	9.2	24.3
39	1	14.0	64.2	3.3	15.1	42.6
40	1	6.0	27.5	5.3	24.3	5.9
41	3	8.7	39.9	6.0	27.5	18.3

1 - Average LAB used to subtract from Gross Sample Activity

21.6	Sample LAB Average
MIN	0.0
MAX	85.3
MEAN	26.1
SD	18.6
Transuranic $DCGL_W$	**100**

QC Measurements

37 QC	1	10.7	49.1	8.0	36.7	17.4
24 QC	3	14.7	67.4	6.7	30.7	35.8
5 QC	3	8.7	39.9	6.0	27.5	8.3

1 - Average QC LAB used to subtract from Gross Sample Activity

31.7	QC LAB Average
MIN	8.3
MAX	35.8
MEAN	20.5
Transuranic $DCGL_W$	**100**

34

SURVEY UNIT 997-2-004
RSC - DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	4	5	6	7
Serial #:	1164	952	971	924
Cal Due Date:	6/17/03	7/9/03	8/6/03	10/23/03
Analysis Date:	5/1/03	5/1/03	5/1/03	5/1/03
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.4	0.2	0.0
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	9.0	9.0	9.0	9.0

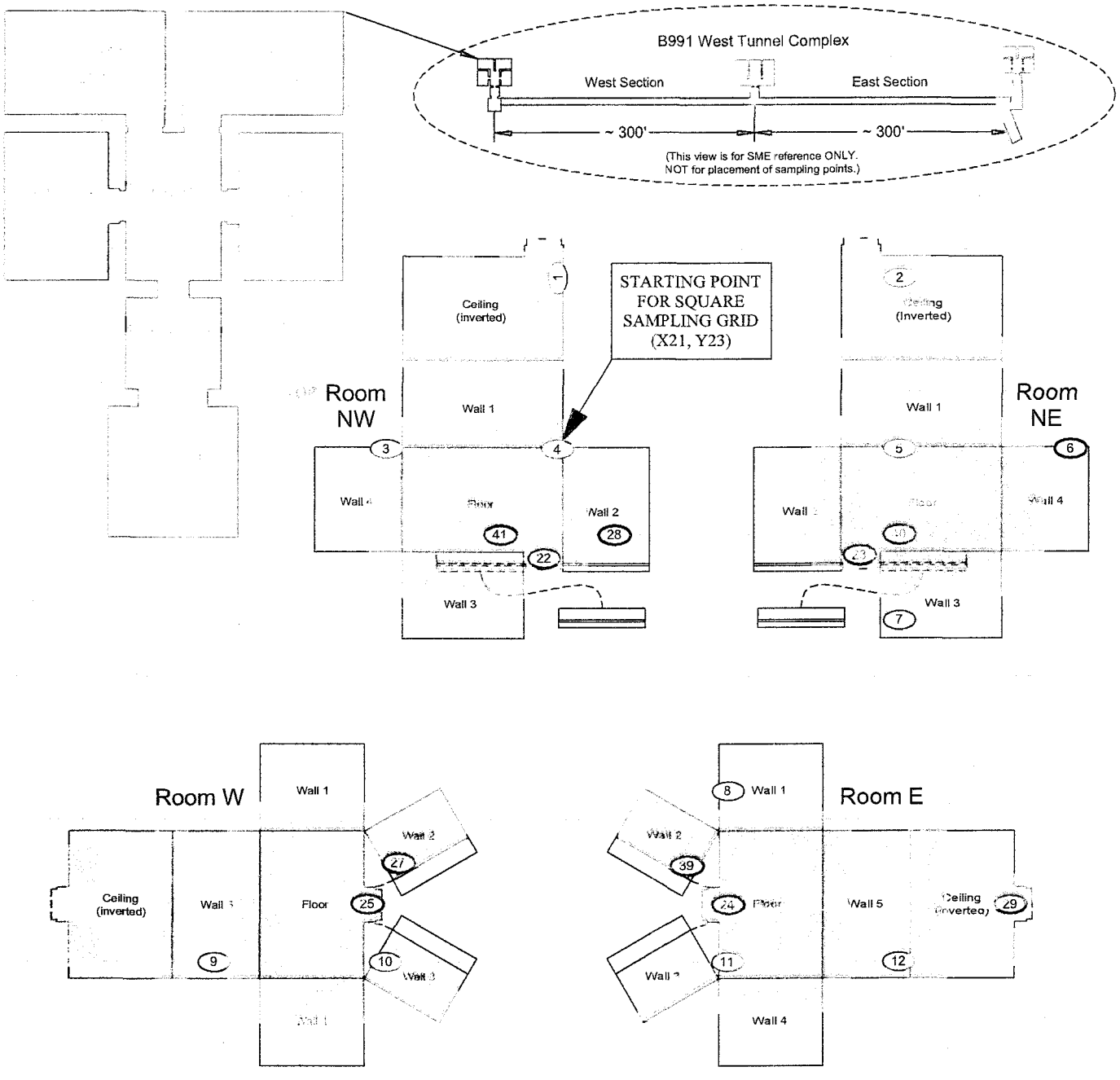
Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	4	0	-0.6
2	5	4	4.8
3	6	1	0.9
4	7	0	0.0
5	4	0	-0.6
6	5	1	0.3
7	6	1	0.9
8	7	0	0.0
9	4	0	-0.6
10	5	3	3.3
11	6	0	-0.6
12	7	0	0.0
13	4	0	-0.6
14	5	1	0.3
15	6	0	-0.6
16	7	0	0.0
17	4	0	-0.6
18	5	0	-1.2
19	6	0	-0.6
20	7	0	0.0
21	4	1	0.9
22	5	1	0.3
23	6	1	0.9
24	7	1	1.5
25	4	1	0.9
26	5	2	1.8
27	6	0	-0.6
28	7	1	1.5
29	4	0	-0.6
30	5	0	-1.2
31	6	0	-0.6
32	7	1	1.5
33	4	1	0.9
34	5	3	3.3
35	6	1	0.9
36	7	0	0.0
37	4	1	0.9
38	5	2	1.8
39	6	0	-0.6
40	7	0	0.0
41	4	2	2.4
		MIN	-1.2
		MAX	4.8
		MEAN	0.5
		SD	1.3
		Transuranic DCGL$_W$	**20**

35

PRE-DEMOLITION SURVEY FOR AREA 2, GROUP 2A

Survey Area: 2 **Survey Unit: 997-2-004** **Classification: 2**
Building: 997
Survey Unit Description: Vault #997 (West end of the West 991 Tunnel) Interior
Total Area: 607 sq. m. **Floor Area: 133 sq. m.** **Wall Area: 340 sq. m.**
Grid Spacing for Survey Points: 6m X 6m

B997 (Vault #997)
(This view is for SME reference ONLY.
NOT for placement of sampling points.)



SURVEY MAP LEGEND	Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&ET, nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.	N	0 FEET 25 / 0 METERS 8	U.S. Department of Energy Rocky Flats Environmental Technology Site
Smear & TSA Location Smear, TSA & Sample Location Open/Inaccessible Area Area in Another Survey Unit	**Scan Survey Information** **Survey Instrument ID #(s) & RCT ID #(s):** **8**		1 inch = 18 feet 1 grid sq. = 1 sq. m.	Prepared by: GIS Dept. 303-966-7707 Prepared for: CH2MHILL Communications Group KAISER HILL MAP ID: 02-0355/B997-PG1-SC July 8, 2003

Scan Area

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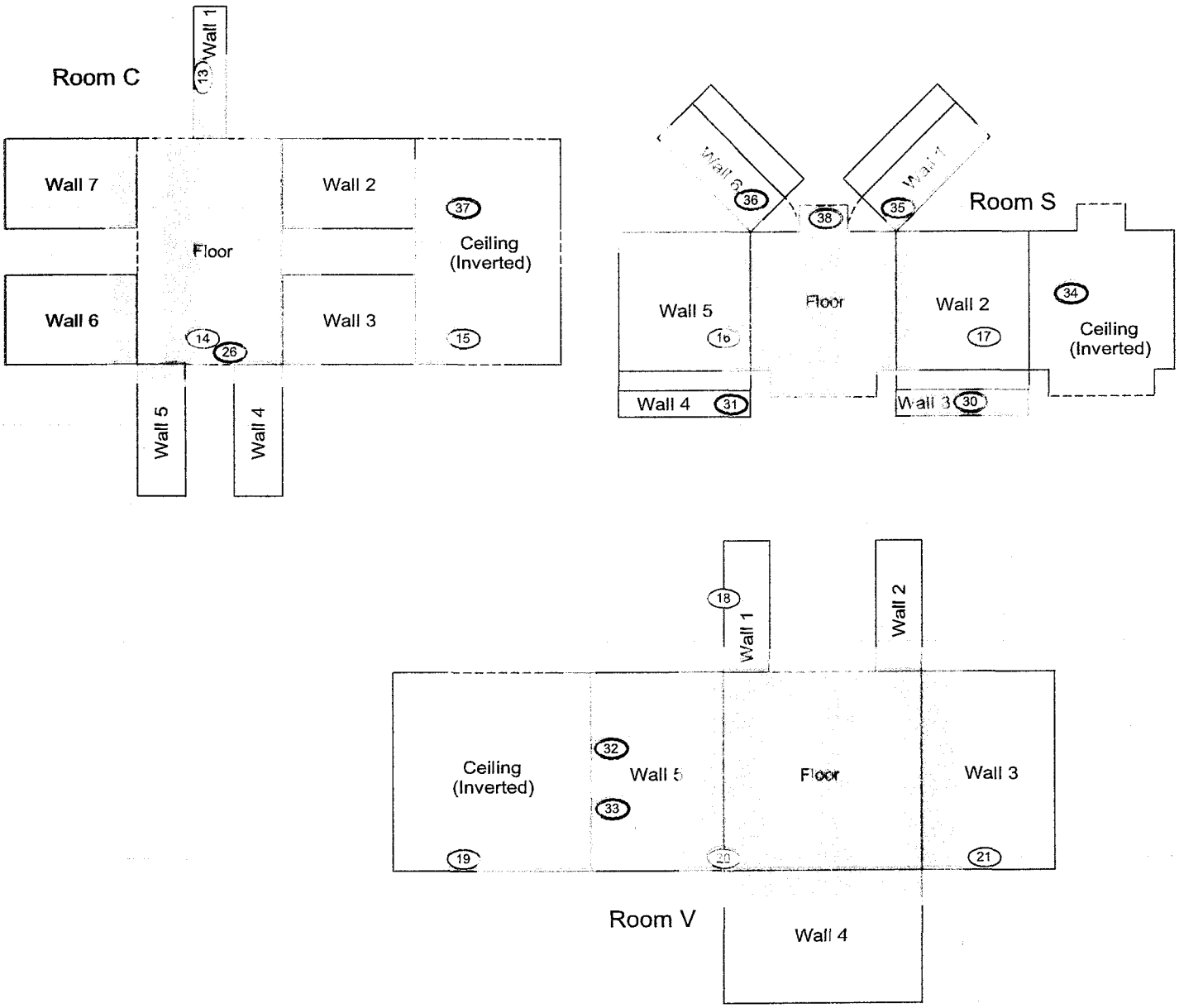
PRE-DEMOLITION SURVEY FOR AREA 2, GROUP 2A

Survey Area: 2 **Survey Unit: 997-2-004** **Classification: 2**
Building: 997
Survey Unit Description: Vault #997 (West end of the West 991 Tunnel) Interior
Total Area: 607 sq. m. **Floor Area: 133 sq. m.** **Wall Area: 340 sq. m.**
Grid Spacing for Survey Points: 6m X 6m



Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15
0 METERS 5

1 inch = 12 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
8

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:

CH2MHILL Communications Group

KAISER HILL

MAP ID: 02-0355/B997-PG2-SC July 8, 2003

SURVEY UNIT 999-2-003
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B999 (Interior)

38

Total Surface Activity Measurements

	35 Number Required	43 Number Obtained	
MIN	-0.8		dpm/100 cm^2
MAX	54.3		dpm/100 cm^2
MEAN	14.0		dpm/100 cm^2
STD DEV	12.6		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	35 Number Required	43 Number Obtained	
MIN	-1.5		dpm/100 cm^2
MAX	4.2		dpm/100 cm^2
MEAN	0.5		dpm/100 cm^2
STD DEV	1.4		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

SURVEY UNIT 999-2-003
TSA - DATA SUMMARY

Manufacturer:	NE Tech	NE Tech
Model:	DP-6	DP-6
Instrument ID#:	1	2
Serial #:	3107	1417
Cal Due Date:	8/6/03	7/28/03
Analysis Date:	4/29/03	4/29/03
Alpha Eff. (c/d):	0.218	0.218
Alpha Bkgd (cpm)	1.3	0.7
Sample Time (min)	1.5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	1	6.7	30.7	7.3	33.5	11.6
2	1	9.3	42.7	4.0	18.3	23.5
3	1	10.7	49.1	8.0	36.7	30.0
4	1	10.0	45.9	6.7	30.7	26.8
5	1	7.3	33.5	5.3	24.2	14.4
6	1	12.0	55.0	7.3	33.5	35.9
7	1	10.7	49.1	7.3	33.5	30.0
8	1	4.7	21.6	3.3	15.1	2.4
9	2	5.3	24.3	4.0	18.3	5.2
10	2	7.3	33.5	1.3	6.0	14.4
11	1	6.7	30.7	3.3	15.1	11.6
12	2	4.0	18.3	4.0	18.3	-0.8
13	2	6.0	27.5	4.7	21.6	8.4
14	2	12.7	58.3	3.3	15.1	39.1
15	2	4.0	18.3	4.7	21.6	-0.8
16	2	6.0	27.5	6.7	30.7	8.4
17	2	6.7	30.7	2.0	9.2	11.6
18	2	6.0	27.5	2.7	12.4	8.4
19	1	4.7	21.6	6.0	27.5	2.4
20	1	4.0	18.3	4.0	18.3	-0.8
21	2	4.7	21.6	1.3	6.0	2.4
22	2	8.7	39.9	1.3	6.0	20.8
23	1	4.7	21.6	4.0	18.3	2.4
24	1	4.0	18.3	0.7	3.2	-0.8
25	2	5.3	24.3	1.3	6.0	5.2
26	1	10.0	45.9	6.0	27.5	26.8
27	1	5.3	24.3	7.3	33.5	5.2
28	1	6.0	27.5	4.0	18.3	8.4
29	2	5.3	24.3	3.3	15.1	5.2
30	2	6.7	30.7	4.7	21.6	11.6
31	2	9.3	42.7	4.0	18.3	23.5
32	1	7.3	33.5	6.7	30.7	14.4
33	2	7.3	33.5	4.0	18.3	14.4
34	1	5.3	24.3	4.0	18.3	5.2
35	1	6.0	27.5	2.0	9.2	8.4
36	1	11.4	52.3	6.0	27.5	33.2

4C

SURVEY UNIT 999-2-003
TSA - DATA SUMMARY

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
37	2	16.0	73.4	1.3	6.0	54.3
38	1	6.7	30.7	4.0	18.3	11.6
39	1	4.7	21.6	2.7	12.4	2.4
40	2	6.0	27.5	6.0	27.5	8.4
41	2	6.0	27.5	0.7	3.2	8.4
42	2	8.0	36.7	2.7	12.4	17.6
43	1	11.3	51.8	5.3	24.3	32.7
					19.1	Sample LAB Average
					MIN	-0.8
					MAX	54.3
					MEAN	14.0
					SD	12.6
					Transuranic $DCGL_W$	100

1 - Average LAB used to subtract from Gross Sample Activity

QC Measurements

25 QC	1	8.0	36.7	6.0	27.5	15.3
10 QC	1	6.0	27.5	4.7	21.6	6.1
42 QC	1	5.0	22.9	3.3	15.1	1.5
					21.4	QC LAB Average
					MIN	1.5
					MAX	15.3
					MEAN	7.6
					Transuranic $DCGL_W$	100

1 - Average QC LAB used to subtract from Gross Sample Activity

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SURVEY UNIT 999-2-003
RSC - DATA SUMMARY

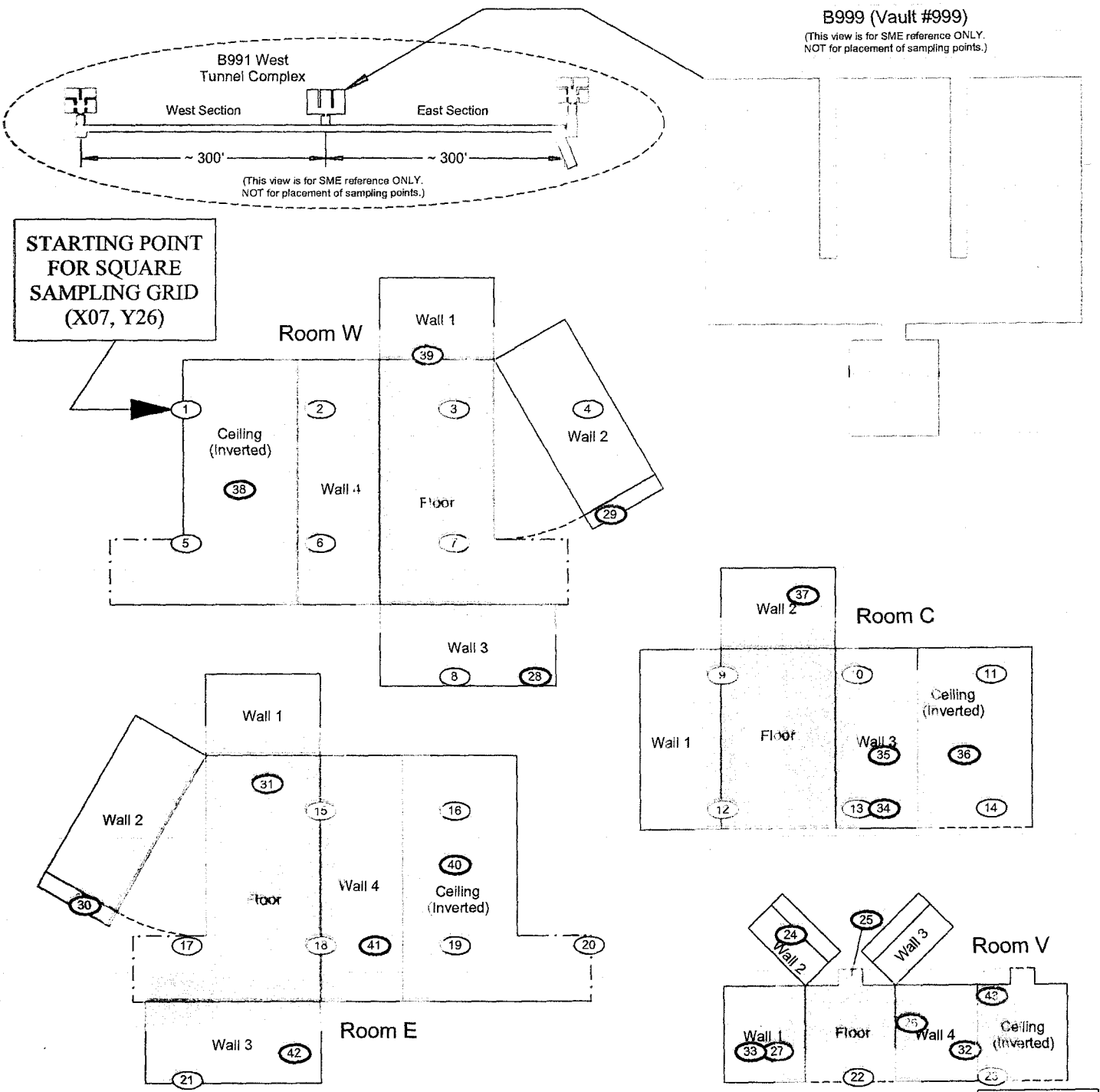
Manufacturer:	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4
Instrument ID#:	3	4	5
Serial #:	1164	952	971
Cal Due Date:	6/17/03	7/9/03	8/6/03
Analysis Date:	4/30/03	4/30/03	4/30/03
Alpha Eff. (c/d):	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.5	0.3
Sample Time (min)	2	2	2
Bkgd Time (min)	10	10	10
MDC (dpm/100cm^2)	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	3	0	-0.3
2	4	2	1.5
3	5	1	0.6
4	3	3	4.2
5	4	2	1.5
6	5	1	0.6
7	3	0	-0.3
8	4	1	0.0
9	5	1	0.6
10	3	0	-0.3
11	4	2	1.5
12	5	0	-0.9
13	3	1	1.2
14	4	2	1.5
15	5	1	0.6
16	3	0	-0.3
17	4	3	3.0
18	5	0	-0.9
19	3	0	-0.3
20	4	0	-1.5
21	5	0	-0.9
22	3	0	-0.3
23	4	2	1.5
24	5	0	-0.9
25	3	1	1.2
26	4	2	1.5
27	5	3	3.6
28	3	0	-0.3
29	4	0	-1.5
30	5	1	0.6
31	3	0	-0.3
32	4	1	0.0
33	5	1	0.6
34	3	1	1.2
35	4	0	-1.5
36	5	1	0.6
37	3	1	1.2
38	4	0	-1.5
39	5	2	2.1
40	3	0	-0.3
41	4	3	3.0
42	5	0	-0.9
43	3	0	-0.3
		MIN	-1.5
		MAX	4.2
		MEAN	0.5
		SD	1.4
		Transuranic DCGL$_W$	**20**

42

PRE-DEMOLITION SURVEY FOR AREA 2, GROUP 2A

Survey Area: 2 **Survey Unit: 999-2-003** **Classification: 2**
Building: B999
Survey Unit Description: Vault #999 (Middle of the West 991 Tunnel) Interior
Total Area: 518 sq. m. **Floor Area: 133 sq. m.** **Wall Area: 253 sq. m.**
Grid Spacing for Survey Points: 5m X 5m



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25
0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
6, 7, 8

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:

CH2MHILL Communications Group

KAISER HILL

MAP ID: 02-0355/B999 PG1-SC Aug. 19, 2003

SURVEY UNIT 985-2-005
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B985 (Interior)

Total Surface Activity Measurements

	55 Number Required	77 Number Obtained	
MIN	-11.7		dpm/100 cm^2
MAX	89.4		dpm/100 cm^2
MEAN	16.4		dpm/100 cm^2
STD DEV	18.9		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	55 Number Required	77 Number Obtained	
MIN	-1.2		dpm/100 cm^2
MAX	4.5		dpm/100 cm^2
MEAN	0.1		dpm/100 cm^2
STD DEV	1.3		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

4/5

SURVEY UNIT 985-2-005
TSA - DATA SUMMARY

Manufacturer:	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech
Model:	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	1	2	3	4	5	6	7
Serial #:	2391	3115	1366	3115	3114	1681	1420
Cal Due Date:	7/10/03	9/24/03	6/26/03	9/24/03	9/3/03	10/18/03	6/4/03
Analysis Date:	4/30/03	4/30/03	4/30/03	5/1/03	5/1/03	5/1/03	5/1/03
Alpha Eff. (c/d):	0.220	0.218	0.209	0.218	0.219	0.218	0.221
Alpha Bkgd (cpm)	1.3	1.3	6.0	1.3	6.7	0.0	0.7
Sample Time (min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0	48.0	48.0	48.0

Manufacturer:	NE Tech	NE Tech	NE Tech
Model:	DP-6	DP-6	DP-6
Instrument ID#:	15	16	21
Serial #:	1417	1425	1273
Cal Due Date:	1/21/04	1/24/04	1/9/04
Analysis Date:	8/12/03	8/12/03	8/13/03
Alpha Eff. (c/d):	0.218	0.225	0.212
Alpha Bkgd (cpm)	3.0	4.7	2.0
Sample Time (min)	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	2	12.7	58.3	8.0	36.7	37.5
2	1	5.3	24.1	4.0	18.2	3.4
3	3	9.3	44.5	7.3	34.9	23.8
4	3	9.3	44.5	6.0	28.7	23.8
5	2	8.7	39.9	8.0	36.7	19.2
6	1	12.0	54.5	7.3	33.2	33.8
7	1	8.7	39.5	4.7	21.4	18.8
8	3	15.3	73.2	4.0	19.1	52.5
9	3	7.3	34.9	8.0	38.3	14.2
10	2	7.3	33.5	5.3	24.3	12.8
11	3	12.0	57.4	8.0	38.3	36.7
12	3	16.0	76.6	6.0	28.7	55.8
13	1	9.3	42.3	4.0	18.2	21.6
14	1	4.0	18.2	6.0	27.3	-2.5
15	2	14.7	67.4	5.3	24.3	46.7
16	1	6.0	27.3	4.0	18.2	6.6
17	3	8.0	38.3	5.3	25.4	17.6
18	2	9.3	42.7	6.0	27.5	22.0
19	4	10.7	49.1	1.3	6.0	28.4
20	4	4.7	21.6	2.0	9.2	0.9
21	4	6.7	30.7	1.3	6.0	10.0
22	4	3.3	15.1	1.3	6.0	-5.6
23	4	4.0	18.3	3.3	15.1	-2.4
24	4	5.3	24.3	1.3	6.0	3.6
25	5	8.0	36.5	4.0	18.3	15.8
26	5	6.0	27.4	6.0	27.4	6.7
27	5	15.3	69.9	5.3	24.2	49.2
28	4	5.3	24.3	2.0	9.2	3.6
29	4	7.3	33.5	2.0	9.2	12.8
30	4	6.0	27.5	2.0	9.2	6.8
31	4	4.7	21.6	6.0	27.5	0.9
32	4	10.0	45.9	3.3	15.1	25.2
33	4	4.0	18.3	2.0	9.2	-2.4
34	4	2.0	9.2	4.7	21.6	-11.5
35	4	4.0	18.3	2.0	9.2	-2.4
36	4	8.0	36.7	1.3	6.0	16.0
37	4	5.3	24.3	2.0	9.2	3.6

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SURVEY UNIT 985-2-005
TSA - DATA SUMMARY

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
38	4	13.3	61.0	6.7	30.7	40.3
39	4	4.3	19.7	1.8	8.3	-1.0
40	4	5.3	24.3	2.7	12.4	3.6
41	4	4.0	18.3	3.3	15.1	-2.4
42	5	7.3	33.3	8.0	36.5	12.6
43	5	6.0	27.4	6.0	27.4	6.7
44	7	2.0	9.0	2.7	12.2	-11.7
45	7	6.7	30.3	4.0	18.1	9.6
46	7	5.3	24.0	2.0	9.0	3.3
47	7	6.0	27.1	1.3	5.9	6.4
48	7	2.7	12.2	2.0	9.0	-8.5
49	6	4.0	18.3	1.3	6.0	-2.4
50	7	6.7	30.3	2.0	9.0	9.6
51	5	10.0	45.7	4.7	21.5	25.0
52	5	8.0	36.5	6.0	27.4	15.8
53	5	9.3	42.5	6.7	30.6	21.8
54	5	7.3	33.3	4.7	21.5	12.6
55	5	12.7	58.0	7.3	33.3	37.3
56	5	10.7	48.9	4.0	18.3	28.2
57	5	9.3	42.5	2.7	12.3	21.8
58	15	5.8	26.6	5.3	24.3	5.9
59	16	10.0	44.4	8.0	35.6	23.7
60	21	22.0	103.8	2.8	13.2	83.4[2]
61	15	24.0	110.1	6.0	27.5	89.4
62	16	8.0	35.6	6.0	26.7	14.8
63	16	7.3	32.4	2.0	8.9	11.7
64	15	14.0	64.2	4.7	21.6	43.5
65	15	5.3	24.3	7.6	34.9	3.6
66	15	10.7	49.1	4.5	20.6	28.4
67	15	5.3	24.3	5.3	24.3	3.6
68	15	7.3	33.5	6.0	27.5	12.8
69	16	9.3	41.3	7.3	32.4	20.6
70	15	9.3	42.7	8.0	36.7	22.0
71	15	6.7	30.7	4.6	21.1	10.0
72	15	8.0	36.7	5.3	24.3	16.0
73	16	8.7	38.7	4.7	20.9	18.0
74	16	8.7	38.7	5.3	23.6	18.0
75	15	7.3	33.5	3.8	17.4	12.8
76	15	4.0	18.3	5.3	24.3	-2.4
77	15	3.3	15.1	4.7	21.6	-5.6

20.7	Sample LAB Average
MIN	-11.7
MAX	89.4
MEAN	16.4
SD	18.9
Transuranic $DCGL_W$	**100**

1 - Average LAB used to subtract from Gross Sample Activity

2 -The initial Sample Net Activity for location 60 was 116.4 dpm/100cm2, and location 61 was 118.9 dpm/100cm2. These locations were sealed and allowed to decay. Re-survey results were less than the transuranic DCGLW, and are reported. No further investigations are required.

QC Measurements

27 QC	6	11.3	51.8	4.7	21.6	32.9
19 QC	5	13.3	60.7	2.7	12.3	41.8
55 QC	7	9.0	40.7	2.0	9.0	21.8
69 QC	15	7.3	33.5	7.3	33.5	14.5
63 QC	15	16.7	76.6	4.0	18.3	57.7

19.0	QC LAB Average
MIN	14.5
MAX	57.7
MEAN	33.7
Transuranic $DCGL_W$	**100**

1 - Average QC LAB used to subtract from Gross Sample Activity

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SURVEY UNIT 985-2-005
RSC - DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	8	9	10	11
Serial #:	1164	952	971	924
Cal Due Date:	6/17/03	7/9/03	8/6/03	10/23/03
Analysis Date:	5/1/03	5/1/03	5/1/03	5/1/03
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.4	0.2	0.0
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	9.0	9.0	9.0	9.0

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	17	18	19	20
Serial #:	770	1164	924	959
Cal Due Date:	10/17/03	11/30/03	10/23/03	1/14/04
Analysis Date:	8/14/03	8/14/03	8/14/03	8/14/03
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.4	0.1	0.3	0.1
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	9.0	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	8	0	-0.6
2	9	1	0.3
3	10	0	-0.6
4	11	0	0.0
5	8	0	-0.6
6	9	0	-1.2
7	10	1	0.9
8	11	0	0.0
9	8	0	-0.6
10	9	0	-1.2
11	10	0	-0.6
12	11	0	0.0
13	8	0	-0.6
14	9	0	-1.2
15	10	0	-0.6
16	11	1	1.5
17	8	0	-0.6
18	9	0	-1.2
19	10	0	-0.6
20	11	0	0.0
21	8	0	-0.6
22	9	0	-1.2
23	10	0	-0.6
24	11	0	0.0
25	8	0	-0.6
26	9	0	-1.2
27	10	1	0.9
28	11	1	1.5

48

SURVEY UNIT 985-2-005
RSC - DATA SUMMARY

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
29	8	1	0.9
30	9	0	-1.2
31	10	2	2.4
32	11	0	0.0
33	8	1	0.9
34	9	0	-1.2
35	10	0	-0.6
36	11	1	1.5
37	8	0	-0.6
38	9	0	-1.2
39	10	0	-0.6
40	11	3	4.5
41	8	0	-0.6
42	9	0	-1.2
43	10	2	2.4
44	11	3	4.5
45	8	0	-0.6
46	9	0	-1.2
47	10	0	-0.6
48	11	1	1.5
49	8	2	2.4
50	9	0	-1.2
51	10	1	0.9
52	11	0	0.0
53	8	0	-0.6
54	9	0	-1.2
55	10	0	-0.6
56	11	0	0.0
57	8	0	-0.6
58	17	2	1.8
59	18	0	-0.3
60	19	0	-0.9
61	20	0	-0.3
62	17	2	1.8
63	18	2	2.7
64	19	1	0.6
65	20	0	-0.3
66	17	0	-1.2
67	18	1	1.2
68	19	0	-0.9
69	20	1	1.2
70	17	3	3.3
71	18	1	1.2
72	19	1	0.6
73	20	0	-0.3
74	17	1	0.3
75	18	0	-0.3
76	19	0	-0.9
77	20	0	-0.3
		MIN	-1.2
		MAX	4.5
		MEAN	0.1
		SD	1.3
		Transuranic $DCGL_W$	**20**

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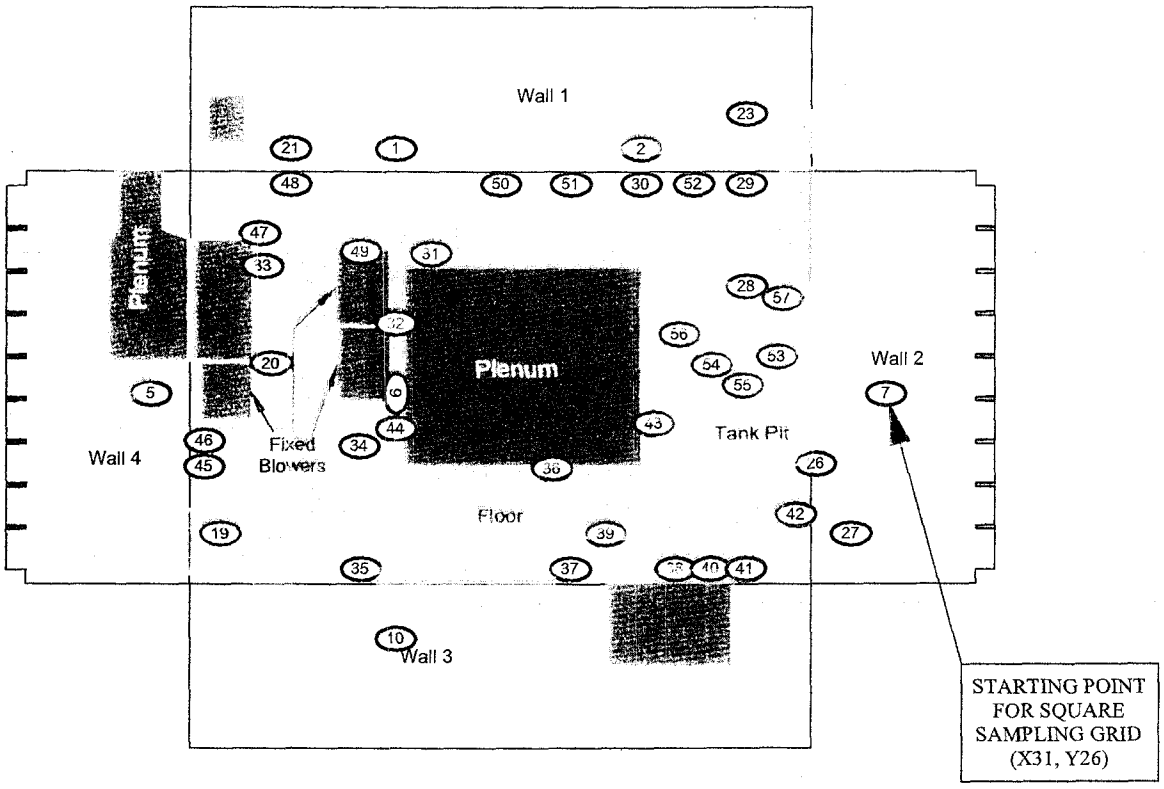
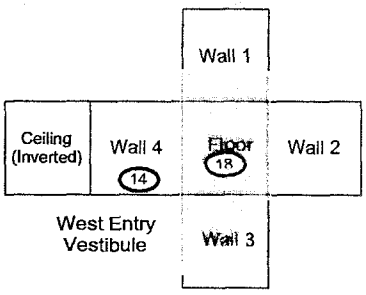
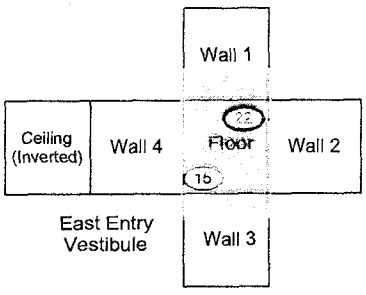
PRE-DEMOLITION SURVEY FOR AREA 2, GROUP 2A

Survey Area: 2 **Survey Unit: 985-2-005** **Classification: 2**
Building: 985
Survey Unit Description: Interior of Building
Total Area: 966 sq. m. **Floor Area: 170 sq. m.** **Wall Area: 397 sq. m.**
Grid Spacing for Survey Points: 7m X 7m

B985







Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25
0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
4, 5, 6, 7, 12, 13 & 14

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 **Prepared for:**

CH2MHILL Communications Group

KAISER HILL

MAP ID: 02-0355/B985 PG1-SC **Aug. 19, 2003**

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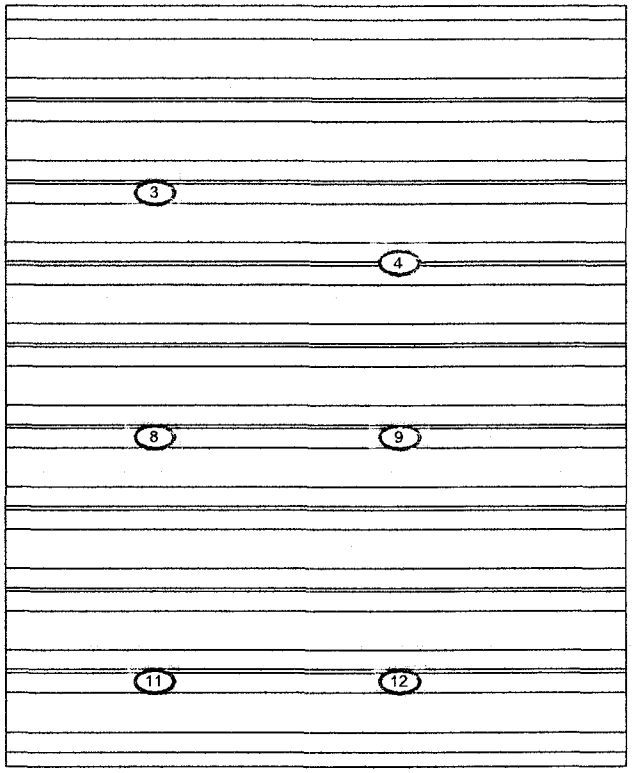
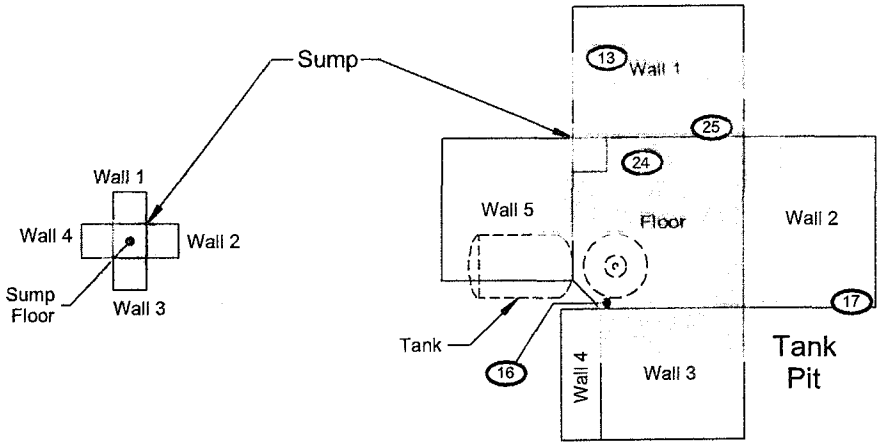
PRE-DEMOLITION SURVEY FOR AREA 2, GROUP 2A

Survey Area: 2 **Survey Unit: 985-2-005** **Classification: 2**
Building: 985
Survey Unit Description: Interior of Filter Plenum Building
Total Area: 966 sq. m. **Floor Area: 170 sq. m.** **Wall Area: 397 sq. m.**
Grid Spacing for Survey Points: 7m X 7m



Inverted Ceiling
(Beams unfolded)



Scan Area

SURVEY MAP LEGEND

- (#) Smear & TSA Location
- (#) Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25
0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
4, 5, 6, 7, 12, 13 & 14

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 **Prepared for:**

CH2MHILL Communications Group

MAP ID: 02-0355/B985 PG2-SC **Aug. 19, 2003**

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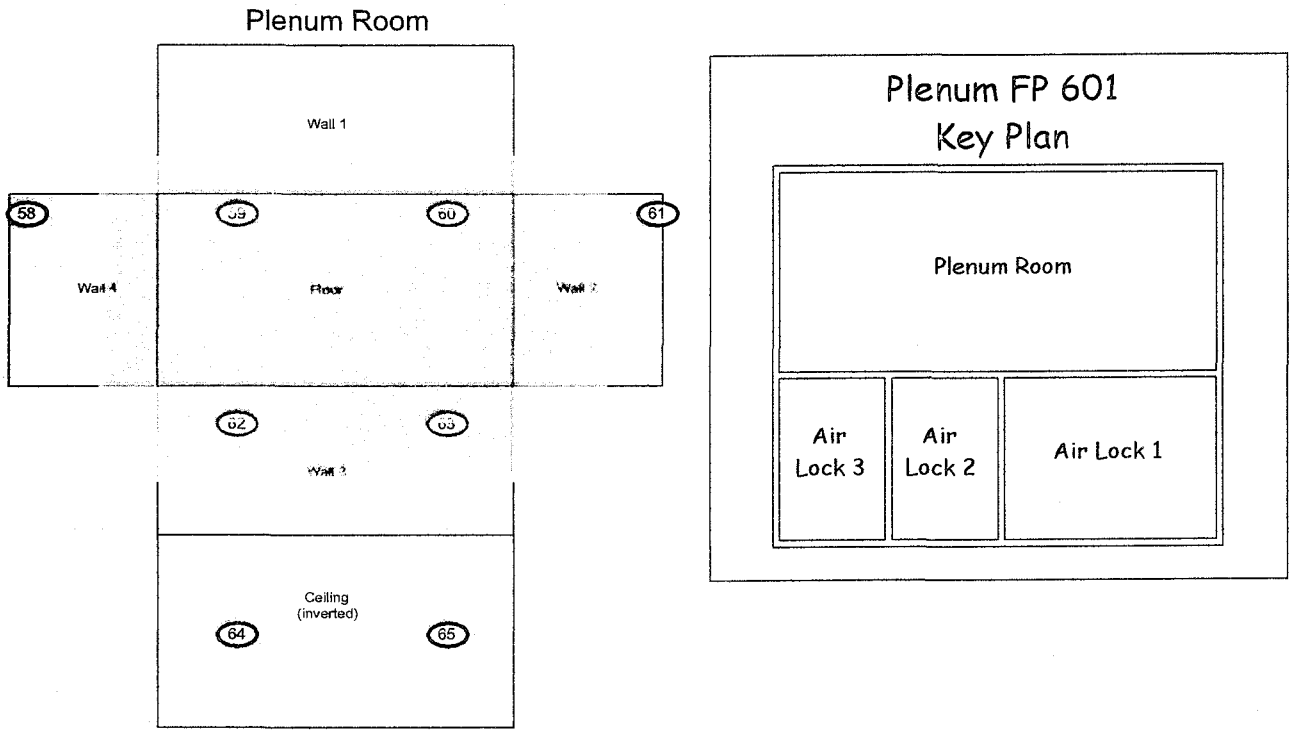
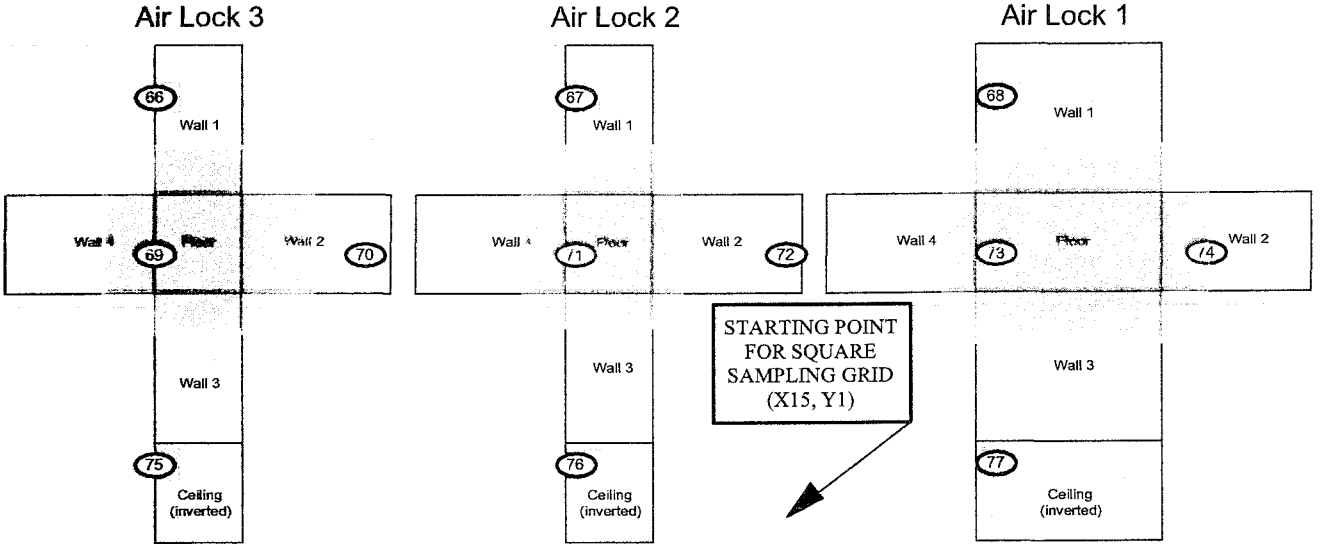
PRE-DEMOLITION SURVEY FOR B985

Survey Area: 2 **Survey Unit: 985-2-005** **Classification: 2**
Building: 985
Survey Unit Description: Building 985 Plenum
Total Area: 205 sq. m. **Total Floor Area: 38 sq. m.**
Grid Spacing for Survey Points: 4m. X 4m.

985 Plenum FP-601





Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15
0 METERS 5

1 inch = 12 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
4, 5, 6, 7, 12, 13 & 14

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:

CH2MHILL Communications Group

KAISER HILL

MAP ID: 02-0355/B986-Plen-SC Aug 19, 2003

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ATTACHMENT C

Chemical Data Summaries and Sample Maps

Beryllium Data Summary

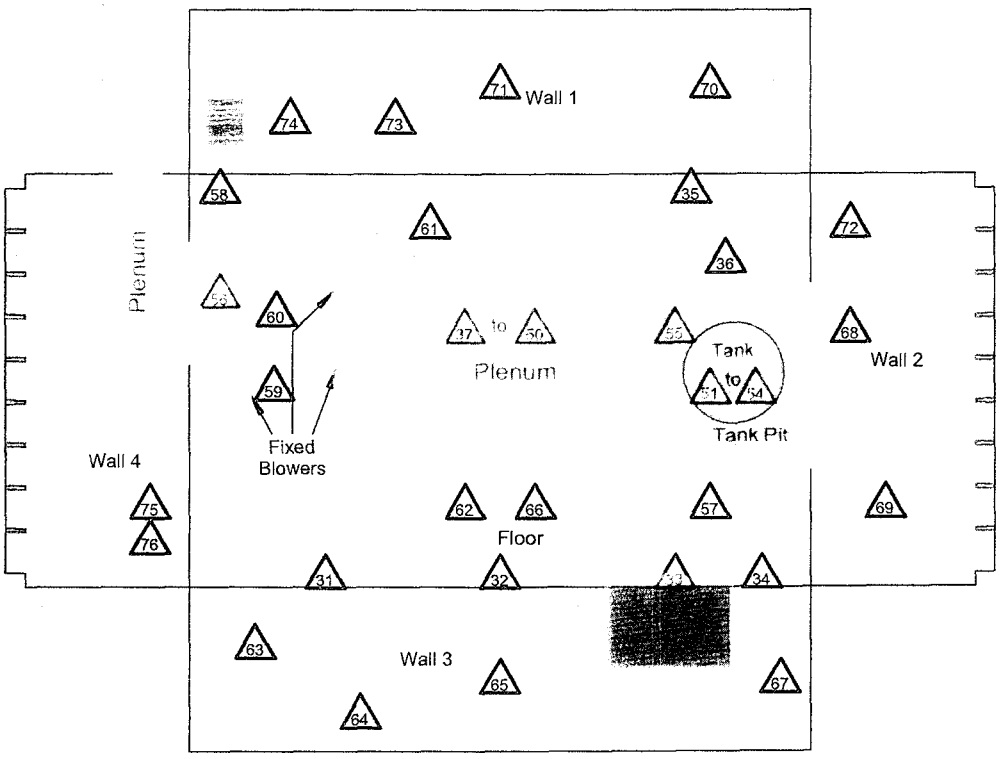
Sample Number	Map Survey Point Location	Room	Sample Location	Result ($\mu g/100\ cm^2$)
Building 991				
991-04162003-315-101	1	402	Inside supply duct	< 0.1
991-04162003-315-102	2	Corridor B	Supply duct for Room 402 by garage	< 0.1
991-04162003-315-103	3	Corridor B	Exhaust duct by Y in the room	< 0.1
991-04162003-315-104	4	996	Right hood	< 0.1
991-04162003-315-105	5	996	Left hood	< 0.1
991-04162003-315-106	6	996 Room 400	Exhaust fan	< 0.1
991-04162003-315-107	7	996 Room 401D	Vent	< 0.1
991-04162003-315-108	8	996 Room 401C	Right vent	< 0.1
991-04162003-315-109	9	996 Room 401C	Left vent	< 0.1
991-04162003-315-110	10	996 Room 401A	Right vent	< 0.1
991-04162003-315-111	11	996 Room 401A	Left vent	< 0.1
991-04162003-315-112	12	Tunnel	Right upper vent	< 0.1
991-04162003-315-113	13	Tunnel	Left upper vent	< 0.1
991-04162003-315-114	14	Tunnel	Right upper vent	< 0.1
991-04162003-315-115	15	Tunnel	Left upper vent	< 0.1
991-04162003-315-116	16	Tunnel	Right upper vent	< 0.1
991-04162003-315-117	17	Tunnel	Left upper vent	< 0.1
991-04162003-315-118	18	Tunnel	Right upper vent	< 0.1
991-04162003-315-119	19	Tunnel	Right upper vent	< 0.1
991-04162003-315-120	20	Tunnel	Left upper vent	< 0.1
991-04162003-315-121	21	Tunnel	Left upper vent	< 0.1
991-04162003-315-122	22	Tunnel	Left upper vent	< 0.1
991-04162003-315-123	23	Tunnel	Right upper vent	< 0.1
991-04162003-315-124	24	Tunnel	Left upper vent	< 0.1
991-04162003-315-125	25	Tunnel	Right upper vent	< 0.1
991-04162003-315-126	26	601D	Vent	< 0.1
991-04162003-315-127	27	601C	Exhaust vent	< 0.1
991-04162003-315-128	28	601B	Exhaust vent	< 0.1
991-04162003-315-129	29	500C	Supply vent	< 0.1
991-04162003-315-130	30	500A	Supply vent	< 0.1
Building 985				
985-04162003-315-101	31	Main	Vent. Biased	< 0.1
985-04162003-315-102	32	Main	Vent. Biased	< 0.1
985-04162003-315-103	33	Main	HP pipe, biased	< 0.1
985-04162003-315-104	34	Main	HP pipe, biased	< 0.1
985-04162003-315-105	35	Main	Hood, biased	< 0.1
985-04162003-315-106	36	Main	Sample line under hood, biased	< 0.1
985-08062003-00-100	37	Main	Plenum Demister Floor, biased	< 0.1
985-08062003-00-101	38	Main	Plenum Demister Floor, biased	< 0.1

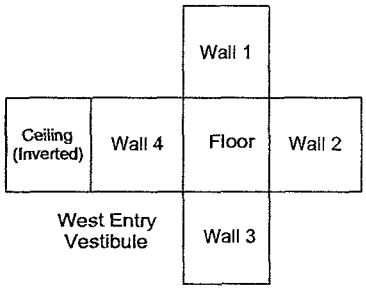
Sample Number	Map Survey Point Location	Room	Sample Location	Result ($\mu g/100\ cm^2$)
985-08062003-00-102	39	Main	Plenum Demister Floor, biased	< 0.1
985-08062003-00-103	40	Main	Plenum Demister Wall, biased	< 0.1
985-08062003-00-104	41	Main	Plenum Demister Floor, biased	< 0.1
985-08062003-00-105	42	Main	Plenum Demister Floor, biased	< 0.1
985-08062003-00-106	43	Main	Plenum Demister Filter rack, biased	< 0.1
985-08062003-00-107	44	Main	Plenum 1st Stage Floor, biased	< 0.1
985-08062003-00-108	45	Main	Plenum 1st Stage Floor, biased	< 0.1
985-08062003-00-109	46	Main	Plenum 1st Stage Filter Rack, biased	< 0.1
985-08062003-00-110	47	Main	Plenum 1st Stage Filter Rack, biased	< 0.1
985-08062003-00-111	48	Main	Plenum 2nd Stage Fan Inlet, biased	< 0.1
985-08062003-00-112	49	Main	Plenum 2nd Stage Floor, biased	< 0.1
985-08062003-00-113	50	Main	Plenum 2nd Stage Filter Rack, biased	< 0.1
985-08062003-00-114	51	Main	Deluge Tank flange internal, biased	< 0.1
985-08062003-00-115	52	Main	Deluge Tank internal, biased	< 0.1
985-08062003-00-116	53	Main	Deluge Tank internal, biased	< 0.1
985-08062003-00-117	54	Main	Deluge Tank internal, biased	< 0.1
985-08062003-00-118	55	Main	Process piping internal, biased	< 0.1
985-08062003-00-119	56	Main	Exhaust Vent louver	< 0.1
985-08062003-00-120	57	Main	Main floor, biased	< 0.1
985-08062003-00-121	58	Main	Top of Junction box, biased	< 0.1
985-08062003-00-122	59	Main	Main floor, biased	< 0.1
985-08062003-00-123	60	Main	Main floor, biased	< 0.1
985-08062003-00-124	61	Main	Main floor, biased	< 0.1
985-08062003-00-125	62	Main	Main floor, biased	< 0.1
985-0522003-315-101	63	Main	Top of fire phone	< 0.1
985-0522003-315-102	64	Main	Top of control panel	< 0.1
985-0522003-315-103	65	Main	Top of wall receptacle	< 0.1
985-0522003-315-104	66	Main	Main floor	< 0.1
985-0522003-315-105	67	Main	Top of electrical conduit	< 0.1
985-0522003-315-106	68	Main	Top of HVAC ductwork	< 0.1
985-0522003-315-107	69	Main	Top of FP-035 Deluge system	< 0.1
985-0522003-315-108	70	Main	Top of fire phone	< 0.1
985-0522003-315-109	71	Main	Top of LCB 602 panel	< 0.1
985-0522003-315-110	72	Main	Top of PB1A-05 alarm panel	< 0.1
985-0522003-315-111	73	Main	Top of LPIC-5A electrical panel	< 0.1
985-0522003-315-112	74	Main	Top of PB1D-05 electrical panel	< 0.1
985-0522003-315-113	75	Main	Top of 6' step ladder	< 0.1
985-0522003-315-114	76	Main	Top of second rung of 6' step ladder	< 0.1

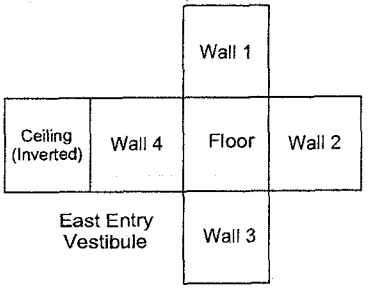
CHEMICAL SAMPLE MAP

Building 985
Beryllium

B985







SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25

0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

CH2MHILL
Communications Group

Prepared for:

MAP ID: 02-0355/B985 PG1-BE

Aug. 19, 2003

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ATTACHMENT D

Data Quality Assessment (DQA) Detail

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION (V&V) OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically beryllium).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed. The radiological survey assessment is provided in Table D-1 and beryllium in Table D-2. A data completeness summary for all results is given in Table D-3.

All relevant Quality records supporting this report are maintained in the RISS Characterization Project File. The report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Beta/gamma survey designs were not implemented for the Area 2 - Group 2a facilities based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Survey designs were implemented for the Area 2 – Group 2a facilities based on the transuranic limits used as DCGLs in the unrestricted release decision process. All survey results were evaluated against, and were less than the Transuranic $DCGL_w$ (100 dpm/100cm^2) and the Uranium $DCGL_w$ (5,000 dpm/100cm^2) unrestricted release limits.

Consistent with EPA's G-4 DQO process, the radiological survey design for each survey unit performed per PDS requirements was optimized by checking actual measurement results acquired during pre-demolition surveys against the model output with original estimates. Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired.

DQA SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable certainties.

Based upon an independent review of the radiological data, it was determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable DCGL unrestricted release levels confirming the Type 2 facility classification. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable RSPs, survey units were properly designed and bounded, and instrument performance and calibration was within acceptable limits. All results meet the PDS unrestricted release criteria.

LC

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been posted to prevent the inadvertent introduction of contamination into the Area 2- Group 2a facilities. On this basis, the Area 2 – Group 2 facilities met the unrestricted release criteria with the confidences stated herein.

Table D-1 V&V of Radiological Results, Area 2-Group 2a Facilities

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	Measure	Frequency	COMMENTS
ACCURACY	Initial calibrations	90%<x<110%	≥1	Multi-point calibration through the measurement range encountered in the field; programmatic records.
	Daily source checks	80%<x<120%	≥1/day	Performed daily/within range.
	Local area background: Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected ranges (i.e., no elevated anomalies.)
PRECISION	Field duplicate measurements for TSA	≥5% of real survey points	≥10% of reals	N/A
REPRESENTATIVENESS	MARSSIM methodology: Survey Units WTUN-2-001, B985-2-005, B996-2-002, B997-2-004 and B999-2-003.	statistical and biased	NA	Random w/ statistical confidence.
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ±1m.
	Controlling Documents (Characterization Pkg; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	Units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys Usable results vs. unusable	>95% >95%	NA	See Table D-3 for details.
SENSITIVITY	Detection limits	TSA: ≤50 dpm/100cm^2 RA: ≤10 dpm/100cm^2	all measures	PDS MDAs ≤ 50% $DCGL_w$

Table D-2 V&V of Beryllium Results, Area 2-Group 2a Facilities

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville and Reservoirs Environmental, Inc.	
		RIN ---->	RIN03Z1750 RIN03Z2088 RIN03D0855	
QUALITY REQUIREMENTS		Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial	linear calibration	≥1	No qualifications significant enough to change project decisions, i.e. classification of a Type 2 Facility confirmed; all results were below associated action levels.
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks – lab & field	<MDL	≥1	
	Interference check std (ICP)	NA	NA	
PRECISION	LCSD	80%<%R<120% (RPD<20%)	≥1	
	Field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/100cm^2	NA	
COMPLETENESS	Plan vs. Actual samples Usable results vs. unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	MDL of 0.012 ug/100cm^2	all measures	

Table D-3 Data Completeness Summary For The Area 2-Group 2a Facilities

ANALYTE	Building/Area/ Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Beryllium	Building 991 West Tunnel, 996, 997 & 999 (interior)	30 biased (interior)	30 biased (interior)	No contamination found at any location	10CFR850; OSHA ID-125G RIN03D0855 – map locations 1 through 30 No results above the action level (0.2 ug/100cm^2) or investigative level (0.1 ug/100cm^2.)
Beryllium	Building 985 (interior)	32 biased (interior)	46 biased (interior)	No contamination found at any location	10CFR850; OSHA ID-125G RIN03Z2088 – map locations 37 through 62 RIN03D0855 – map locations 31 through 36 RIN03Z1750 – map locations 62 through 76 No results above the action level (0.2 ug/100cm^2) or investigative level (0.1 ug/100cm^2.)
Radiological	Survey Area 2 Survey Unit: WTUN-2-001 West 991 Tunnel (interior)	15α TSA and 15α Smears (systematic) 20α TSA and 20α Smears (biased) 30α TSA and 30α Smears (equipment) 4 QC TSA 25% scan of interior floors, 10% scan of walls and ceiling	16α TSA and 16α Smears (systematic) 20α TSA and 20α Smears (biased) 30α TSA and 30α Smears (equipment) 4 QC TSA 25% scan of interior floors, 10% scan of walls and ceiling	No contamination at any location; all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable.

Table D-3 Data Completeness Summary For The Area 2-Group 2a Facilities

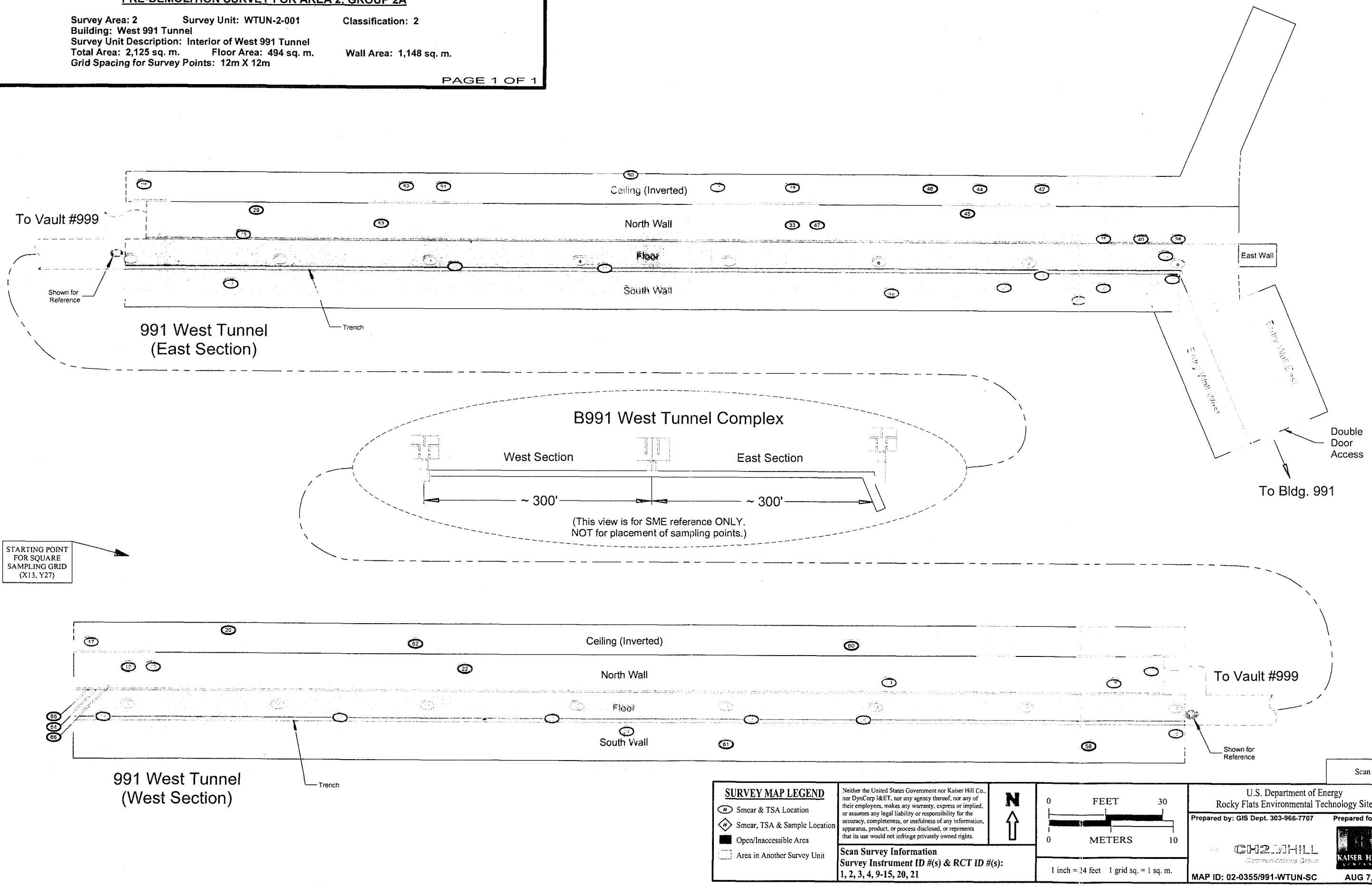
ANALYTE	Building/Area/ Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area 2 Survey Unit: B985-2-005 Bldg. 985 (interior)	15α TSA and 15α Smears (systematic) 10α TSA and 10α Smears (biased) 30 α TSA and 30 α Smears (equipment) 3 QC TSA 25% scan of interior floors, 10% scan of walls and ceiling	37α TSA and 37α Smears (systematic) 10α TSA and 10α Smears (biased) 30 α TSA and 30 α Smears (equipment) 5 QC TSA 25% scan of interior floors, 10% scan of walls and ceiling	No contamination at any location; all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable. Initial net activity at locations 60 (116.4 dpm/100cm^2) and 61 (118.9 dpm/100cm^2) greater than the Transuranic $DCGL_w$ (100.0 dpm/100cm^2). The locations were sealed, allowed to decay and resurveyed. Resurvey results were below the transuranic $DCGL_w$ and are the values reported in the PDS data summary. No further investigation required.
Radiological	Survey Area 2 Survey Unit: B996-2-002 Bldg. 996-Vault (interior)	15α TSA and 15α Smears (systematic) 10α TSA and 10α Smears (biased) 10α TSA and 10α Smears (equipment) 3 QC TSA 25% scan of interior floors, 10% scan of walls and ceiling	19á TSA and 19á Smears (systematic) 11á TSA and 10α Smears (biased) 10á TSA and 10α Smears (equipment) 3 QC TSA 25% scan of interior floors, 10% scan of walls and ceiling	No contamination at any location; all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable.

Table D-3 Data Completeness Summary For The Area 2-Group 2a Facilities

ANALYTE	Building/Area/ Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area 2 Survey Unit: B997-2-004 Bldg. 997-Vault (interior)	15α TSA and 15α Smears (systematic) 10α TSA and 10α Smears (biased) 10α TSA and 10α Smears (equipment) 3 QC TSA 25% scan of interior floors, 10% scan of walls and ceiling	15á TSA and 15á Smears (systematic) 10á TSA and 10α Smears (biased) 10α TSA and 10α Smears (equipment) 3 QC TSA 25% scan of interior floors, 10% scan of walls and ceiling	No contamination at any location; all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable.
Radiological	Survey Area 2 Survey Unit: B999-2-003 Bldg. 999-Vault (interior)	15α TSA and 15α Smears (systematic) 10α TSA and 10α Smears (biased) 10α TSA and 10α Smears (equipment) 3 QC TSA 25% scan of interior floors, 10% scan of walls and ceiling	23α TSA and 23α Smears (systematic) 10α TSA and 10α Smears (biased) 10α TSA and 10α Smears (equipment) 3 QC TSA 25% scan of interior floors, 10% scan of walls and ceiling	No contamination at any location; all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable.

PRE-DEMOLITION SURVEY FOR AREA 2, GROUP 2A

Survey Area: 2 **Survey Unit: WTUN-2-001** **Classification: 2**
Building: West 991 Tunnel
Survey Unit Description: Interior of West 991 Tunnel
Total Area: 2,125 sq. m. **Floor Area: 494 sq. m.** **Wall Area: 1,148 sq. m.**
Grid Spacing for Survey Points: 12m X 12m



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Area

Scan Survey Information
Survey Instrument *ID #(s) & RCT ID #(s):*
1, 2, 3, 4, 9-15, 20, 21

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 **Prepared for:**

CH2MHILL Communications Group

KAISER HILL COMPANY

MAP ID: 02-0355/991-WTUN-SC **AUG 7, 2003**

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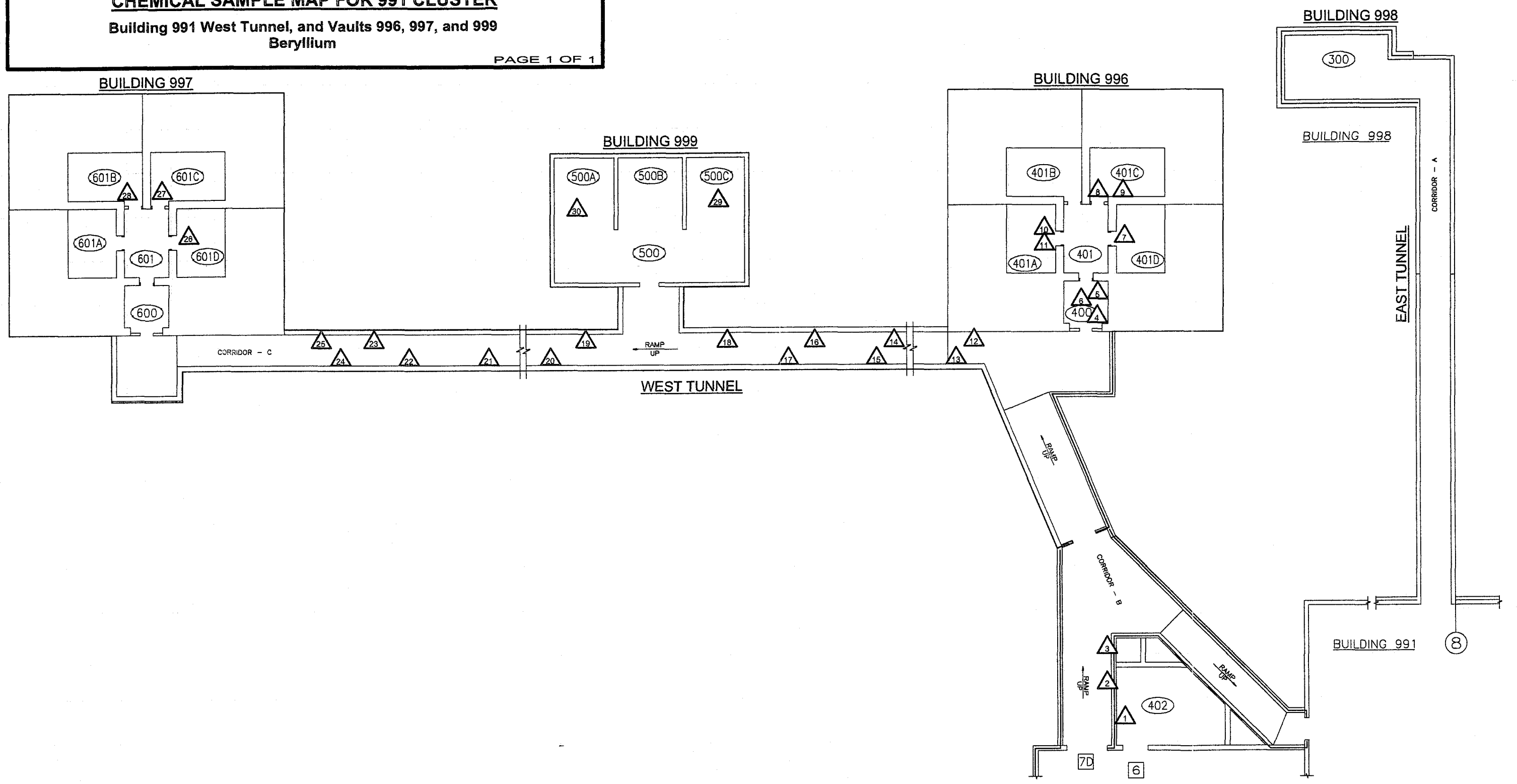
CHEMICAL SAMPLE MAP FOR 991 CLUSTER

Building 991 West Tunnel, and Vaults 996, 997, and 999
Beryllium



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 0

0 METERS 0

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:

CH2.AHILL
Communications Group

MAP ID: 02-0355/991T-W-BE

May 14, 2003